FULTON COUNTY PURCHASING DEPARTMENT

Winner 2000- 2005 Achievement of Excellence in Procurement Award
National Purchasing Institute

Jerome Noble, Director

May 18, 2006

RE: **#06ITB49976K-RS, Fairburn Neighborhood Senior Center**

Dear Bidders:

Attached is one (1) copy of Addendum 2, hereby made a part of the above referenced Invitation to Bid (ITB).

Except as provided herein, all terms and conditions in the bid referenced above remain unchanged and in full force and effect.

Sincerely,

Rholanda M. Stanberry

Chief Assistant Purchasing Agent

130 Peachtree Street, S.W. · Suite 1168 · First Floor · Atlanta, Georgia 30303-3459 · Telephone (404) 730-5800

This Addendum forms a part of the contract documents and **modifies** the original ITB documents as noted below:

ACKNOWLEDGEMENT OF ADDENDUM NO. 2

The undersigned bidder acknowledges receipt of this addendum by returning one (1) copy of this form with the proposal package to the Purchasing Department, Fulton County Public Safety Building, 130 Peachtree Street, Suite 1168, Atlanta, Georgia 30335 by the ITB due date and time **Wednesday, June 7, 2006 no later than 11:00 A.M.**

This is to acknowledge receipt of Addendum No. 2, _____ day of _____, 2006.

_____
Legal Name of Bidder

_____
Signature of Authorized Representative

_____
Title

Addendum No. 2

Item 1 Issue Division 9 specifications

1. Issue Division 9 specifications per Table of Contents:
   - 09 220 PORTLAND CEMENT STUCCO
   - 09 260 GYPSUM BOARD ASSEMBLIES
   - 09 300 CERAMIC TILE
   - 09 510 ACOUSTICAL PANEL CEILINGS
   - 09 622 RUBBER RECREATIONAL AND ATHLETIC FLOORING
   - 09 650 RESILIENT FLOORING
   - 09 670 EPOXY RESIN COMPOSTION FLOORING
   - 09 680 CARPET
   - 09 770 FIBER REINFORCED PLASTIC PANELS
   - 09 910 PAINTING

End Addendum No. 2

Section 09 220 - Portland Cement Stucco

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Materials and installation of exterior stucco wall covering.

1.02 REFERENCED DOCUMENTS

A. ASTM Standards:

1. A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
2. A 653 Specification for Sheet Steel Zinc coated (Galvanized) by the Hot-Dip Process, Commercial Quality
3. B 69 Specification for Roller Zinc
4. C 79 Test Method for Gypsum Sheathing Board
5. C 578 Specification for Preformed, Cellular Polystyrene Thermal Insulation
6. C 847 Standard Specification for Metal Lath
7. C 897 Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters
8. C 1032 Standard Specification for Woven Wire Plaster Base
9. C 1063 Standard Specification for Installation of Lathing and Furring for Portland Cement Plaster
10. C 1177 Specification for Glass Mat Gypsum for Use as Sheathing
11. D 226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
12. D 1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
13. E 84 Test Method for Surface Burning Characteristics of Building Materials
14. E 119 Method for Fire Tests of Building Construction and Materials
15. E 330 Test Method for Structural Performance of Windows, Curtain Walls, and Doors by Uniform Static air Pressure Difference
16. G 26 Standard Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials

B. APA Engineered Wood Association

1. E 30 Residential and Commercial Construction Guide

C. EIMA (EIFS Industry Members Association)

1. EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board

D. Gypsum Association

1. GA-253 Application of Gypsum Sheathing

E. ICBO ES (International Conference of Building Officials Evaluation Service)

1. (AC 11) Acceptance Criteria for Cementitious Exterior Wall Coatings

1.03 DESIGN REQUIREMENTS

A. Structural (wind and axial loads)

1. Design for maximum allowable deflection, normal to the plane of the wall, of L/360
2. Design for wind load in conformance with code requirements. Consult applicable code compliance report.

B. Moisture Control

1. Prevent the accumulation of water into or behind the stucco, either by condensation or leakage into the wall construction, in the design and detailing of the wall assembly.
   a. Provide corrosion resistant flashing to direct water to the exterior where it is likely to penetrate components in the wall assembly, including, above window and door heads, beneath window and door sills, at roof/wall intersections, decks, abutments of lower walls with higher walls, above projecting features, and at the base of the wall.
   b. Air Leakage Prevention—prevent excess air leakage in the design and detailing of the wall assembly. Provide continuity between air barrier components in the wall assembly.
   c. Vapor Diffusion and Condensation-- perform a dew point analysis of the wall assembly to determine the potential for accumulation of moisture in the wall assembly as a result of water vapor diffusion and condensation. Adjust insulation thickness and/or other wall assembly components accordingly to minimize the risk of condensation. Avoid the use of vapor retarders on the interior side of the wall in warm, humid climates.
   d. On framed wall construction provide a code compliant moisture barrier over sheathing. Note: building codes vary with respect to the type moisture barrier required and the number of layers. For example, the Uniform Building Code (UBC) requires two layers of Type 1 Grade D building paper over wood-based sheathings. Check the applicable code and code compliance report for the appropriate type.
   e. Protect sills of rough openings with barrier membrane. Where casing bead is used back-to-back at expansion joints, back joints with barrier membrane. Refer to Sto details.

C. Grade Condition

1. Do not specify the stucco for use below grade or on surfaces subject to continuous or intermittent water immersion or hydrostatic pressure. Provide minimum 4 inch (100 mm) clearance above earth grade, minimum 2 inch (51 mm) clearance above finished grade (pavers/sidewalk). Provide increased clearance in freeze/thaw climate zones.

D. Sloped surfaces, including Foam Trim and Projecting Architectural Features attached to stucco.

1. Avoid the use of stucco on build-outs or weather exposed sloped and horizontal surfaces (refer to 2 and 3 below).
2. Build out trim and projecting architectural features from the stucco wall surface with code compliant EPS foam. All foam trim and projecting architectural features must have a minimum 1:2 [27°] slope along their top surface. All foam horizontal reveals must have a minimum 1:2 [27°] slope along their bottom surface. Increase slope for northern climates to prevent accumulation of ice/snow and water on surface. Where trim/feature or bottom surface of reveal projects more than 2 inches (51 mm) from the face of the wall plane, protect the top surface with waterproof base coat. Avoid the use of trim and features that exceed the maximum allowable thickness of EPS permitted by code (typically 4 inches [100 mm]) unless approved by the code official. Periodic inspections and increased maintenance may be required to maintain surface integrity of finishes on weather exposed sloped surfaces. Limit projecting features to easily accessible areas and limit total area to facilitate maintenance and minimize maintenance burden. Refer to Sto details.
3. Do not use EPS foam on weather exposed projecting ledges, sills, or other projecting features unless supported by framing or other structural support and protected with metal coping or flashing. Refer to Sto details.

E. Joints

1. Provide two piece expansion joints in the stucco system where building movement is anticipated: at joints in the substrate or supporting construction, where the system is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, at columns and cantilevered areas. Provide one piece expansion joints every 144 ft^2 (13 m^2)*. Cut and wire tie lath to the expansion joint accessory so lath is discontinuous beneath the accessory. Do not exceed length to width ratio of 2-1/2:1 in expansion joint layout and do not exceed more than 18 feet (5.5 m) in any direction without an expansion joint. Where casing bead is used back-to-back as the expansion joint, back the joint with barrier membrane.
2. Provide one piece expansion joints at through wall penetrations, for example, above and below doors or windows.
3. Provide minimum 3/8 inch (9 mm) wide joints where the system abuts windows, doors and other through wall penetrations.
4. Provide appropriate accessories at stucco terminations and joints.
5. Provide appropriate sealant at stucco terminations.
6. Indicate location of joints, accessories and accessory type on architectural drawings.

F. Fire Protection

1. Do not use foam trim in excess of 4 inches (100 mm) thick unless approved by the code official on buildings of noncombustible construction.
2. Refer to the applicable code compliance report for other limitations and fire-resistive assemblies that may apply.

G. Solid Substrates

1. Provide surface plane tolerance not to exceed ¼ inch in 10 feet (6 mm in 3.0 m).
2. Concrete—prevent the use of form oil, curing compounds or other bond breakers that inhibit bond to the surface or provide for their removal.

3. Concrete Masonry—provide open texture concrete masonry units with flush joints.

H. Stucco Thickness: General

1. Direct Application to Concrete or Concrete Masonry: stucco thickness shall not exceed ½ inch (13 mm) applied in one or two coats.
2. Application to Metal Plaster Bases:
   a. Woven wire fabric lath: stucco thickness shall be ½ inch (13 mm) applied in one or two coats
   b. Galvanized diamond mesh metal lath:
      i. 1.75 lb/yd^2 (1 kg/m^2): stucco thickness shall be ½ inch (13 mm) applied in one or two coats.
      ii. Minimum 2.5 lb/yd^2 (1.4 kg/m^2): stucco thickness shall be ½ to 7/8 inch (13 to 22 mm). ½ inch (13 mm) thickness shall be applied in one or two coats. Thicknesses in excess of ½ inch up to 7/8 inch (13 up to 22 mm) shall be applied in two coats.

3. Thickness shall be uniform throughout the wall area.

I. Stucco Thickness: Specific

1. See SBCCI PST & ESI Evaluation Report No. 9838B and ICBO ES Evaluation Report No.3899 for required thickness of listed wind resistant and fire-resistive assemblies

1.04 PERFORMANCE REQUIREMENTS

A. Sto Powerwall® Stucco

TEST	METHOD	CRITERIA	RESULT
Accelerated Weathering	ASTM G 26	2000 hours	No chalking, cracking, checking, crazing, or erosion
Freeze-Thaw	ICBO AC 11	10 cycles	No cracking, checking or crazing
Surface Burning	ASTM E 84	Flame spread of less than 25, Smoke Developed of less than 450	Flame Spread: < 5 Smoke Developed: < 10
Fire Resistance	ASTM E 119	One hour fire resistive rating	Pass, refer to SBCCI PST & ESI Report No. 9838B and ICBO ES Report No. 3899 for listed assemblies
Wind Loads	ASTM E 330	Allowable design pressure	Refer to SBCCI PST & ESI Report No. 9838B for assemblies

*Note: refer to the appropriate Sto Technical Bulletin for performance data on Sto finishes for use over Sto Powerwall® Stucco

1.05 SUBMITTALS

A. Manufacturer's specifications, details, installation instructions and product data.

B. Manufacturer's code compliance report.

C. Manufacturer's standard warranty.

D. Samples for approval as directed by architect or owner.

E. EPS board manufacturer's certificate of compliance with the current edition of EIMA Guideline Specifications for the use of Expanded Polystyrene (EPS) Insulation Board.

F. Prepare and submit project-specific details (when required by contract documents).

1.06 QUALITY ASSURANCE

A. Manufacturer requirements
1. Stucco products manufacturer for a minimum of twenty (20) years.
2. Stucco finish products manufactured under ISO 9001:2000 Quality System.

B. Contractor requirements

1. Licensed, insured and engaged in application of portland cement stucco for a minimum of three (3) years.
2. Knowledgeable in the proper use and handling of Sto materials.
3. Employ skilled mechanics who are experienced and knowledgeable in portland cement stucco application, and familiar with the requirements of the specified work.
4. Successful completion of minimum of three (3) projects of similar size and complexity to the specified project.
5. Provide the proper equipment, manpower and supervision on the job site to install the system in compliance with Sto's published specifications and details and the project plans and specifications.

C. Insulation board manufacturer requirements
1. Recognized by Sto as capable of producing insulation board to meet system requirements, and hold a valid licensing agreement with Sto.
2. Listed by an approved agency. Label insulation board with information required by Sto, the approved listing agency, and the applicable building code.

D. Mock-up Testing (for projects of sufficient size or complexity)
1. Construct full-scale mock-up of typical stucco/window wall assembly with specified tools and materials and test air and water infiltration and structural performance in accordance with ASTM E 283, E 331 and E 330, respectively, through independent laboratory. Mock-up shall comply with requirements of project specifications. Where mock-up is tested at job site maintain approved mock-up at site as reference standard. If tested off-site accurately record construction detailing and sequencing of approved mock-up for replication during construction.

E. Inspections
   1. Provide independent third party inspection where required by code or contract documents.
   2. Conduct inspections in accordance with code requirements and contract documents.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in their original sealed containers bearing manufacturer's name and identification of product.

B. Protect coatings (pail products) from freezing and temperatures in excess of 90°F (32° C). Store away from direct sunlight.

C. Protect Portland cement based materials (bag products) from moisture and humidity. Store under cover off the ground in a dry location.

1.09 PROJECT/SITE CONDITIONS

A. Maintain ambient and surface temperatures above 40°F (4°C) during application and for 24 hours after set of stucco.

B. Provide supplementary heat for installation in temperatures less than 40°F (4°C) such that temperatures are maintained as in 1.09A. Prevent concentration of heat on uncured stucco and vent fumes and other products of combustion to the outside to prevent contact with stucco.

C. Prevent uneven or excessive evaporation of moisture from stucco during hot, dry or windy weather. For installation under any of these conditions provide special measures to properly moist cure the stucco.

D. Provide protection of surrounding areas and adjacent surfaces from application of materials.

1.10 COORDINATION/SCHEDULING

(The work in this section requires close coordination with related sections and trades. Sequence work to provide protection of construction materials from weather deterioration)

A. Provide minimum 28 day cure of concrete and concrete masonry units before the installation of stucco.

B. For load bearing concrete masonry and stud wall assemblies, commence the stucco installation after completion of all floor, roof construction and other construction that imposes dead loads on the walls to prevent excessive deflection (and potential cracking) of the stucco.

C. Sequence interior work such as drywall installation prior to stucco installation to prevent stud distortion (and potential cracking) of the stucco.

D. Provide site grading such that the stucco terminates above earth grade minimum 4 inches (100 mm) and above finished grade (pavers/sidewalk) minimum 2 inches (51 mm). Provide increased clearance in freeze/thaw climate zones.

E. Provide protection of rough openings before installing windows, doors, and other penetrations through the wall and provide sill flashing. Coordinate installation of moisture barrier with window and door installation to provide weather proofing of the structure and to prevent moisture infiltration and excess air infiltration.

F. Install window and door head flashing immediately after windows and doors are installed.

G. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.

H. Install copings and sealant immediately after installation of the stucco and when finish coatings are dry.

I. Attach penetrations through stucco to structural support and provide water tight seal at penetrations.

1.11 WARRANTY

A. Provide manufacturer's standard warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sto Corp. used as standard of quality. All other manufacturers meeting specifications may be considered.

B. Provide stucco, primer and finish from single source manufacturer.

2.02 SURFACE PREPARATION (optional component, depending on substrate condition)

A. Sto Bonding Agent--copolymer bonding agent for brush or roller application to prepared CMU surfaces.

2.03 MOISTURE BARRIER (supplied by others)

A. Minimum 14 lb/100 ft^2 (0.683 kg/m^2) vapor permeable asphalt saturated felt in compliance with ASTM D 226 or equal.

2.04 LATH (supplied by others);)

A. Minimum No. 20 gauge 1 inch (25 mm) self-furred galvanized steel woven wire fabric in compliance with ASTM C 1032, or minimum 1.75 lb/yd^2 [1 kg/m^2] galvanized steel diamond mesh metal lath in compliance with ASTM C 847.

2.05 MECHANICAL FASTENERS (supplied by others)

A. Appropriate non-corroding fasteners, depending on the type framing or substrate:

1. Steel Framing—minimum #8 Type S or S-12 wafer head fully threaded corrosion resistant screws with minimum 3/8 inch (10 mm) penetration into studs.
2. Concrete or Masonry—minimum # 8 wafer head fully threaded corrosion resistant screws for masonry with minimum 1 inch (25 mm) penetration into substrate.

B. Tie Wire—18 gauge galvanized and annealed low-carbon steel in compliance with ASTM A 641 with Class I coating.

2.06 ACCESSORIES (supplied by others, select one type)

A. Weep screed, casing bead, corner bead, corner lath, expansion and control joint accessories. All accessories shall meet the requirements of ASTM C 1063 and its referenced documents:

1. PVC plastic in compliance with ASTM D 1784, cell classification 13244C.
2. Zinc in compliance with ASTM B 69.
3. Galvanized metal in compliance with ASTM A 653 with G60 coating.

B. All accessories shall have perforated or expanded flanges and shall be designed with grounds for the specified thickness of stucco.

2.07 JOB MIXED INGREDIENTS

A. Water—clean and potable.

B. Clean, well graded sand free of deleterious materials in compliance with ASTM C 897.

C. Stucco Admixture

1. Sto Bonding Agent—copolymer admixture for Sto Powerwall® Stucco.

2.08 STUCCO

A. Sto Powerwall® Stucco — factory proportioned, fiber reinforced portland cement based stucco for trowel or pump application, field mixed with graded sand (ASTM C 897) and water.

2.09 PRIMER

A. Sto Primer—acrylic based tinted primer.

2.10 FINISH COAT (select one from among the Sto textured wall finish products)

A. Sto acrylic or silicone enhanced elastomeric textured wall finish

2.11 MIXING

A. Sto Bonding Agent—no mixing required when used as a bonding agent. Shake sealed container before use to a homogeneous consistency.

B. Sto Powerwall® Stucco (SBCCI PST & ESI Report No. 9838B) -- mix 200 lbs. (90 kg) of sand to an 80 lb (36 kg) bag of Sto Powerwall Stucco and 4 to 6.5 gallons (15-25 L) of clean water. Add ½ to 2/3 of the required water, ½ of the sand, and one bag of Sto Powerwall Stucco in a paddle type mortar mixer. Then add the rest of the sand and sufficient water to achieve a uniform mix of workable consistency. Mix for 3—5 minutes after all materials are in the mixer. Stucco material can be retempered once in the first hour after mixing. Avoid retempering after the first hour and discard material older than 1.5 hours. Keep mix ratio consistent from batch to batch and mix each batch separately. Use only the amount of water necessary for a workable mix. Use of excess water is detrimental to performance.

C. Sto Powerwall® Stucco (ICBO ES Report No. 3899) - mix 200 lbs. (90 kg) of sand to an 80 lb (36 kg) bag of Sto Powerwall Stucco and approximately 4 gallons (15 L) of clean water in a paddle type mortar mixer. Add ½ to 2/3 of the required water, ½ of the sand, and one bag of Sto Powerwall Stucco in a paddle type mortar mixer. Then add the rest of the sand and sufficient water to achieve a uniform mix of workable consistency. Mix for 3—5 minutes after all materials are in the mixer. Stucco material can be retempered once in the first hour after mixing. Avoid retempering after the first hour and discard material older than 1.5 hours. Keep mix ratio consistent from batch to batch and mix each batch separately. Use only the amount of water necessary for a workable mix. Use of excess water is detrimental to performance.

D. Sto Powerwall® Polymer Modified Stucco-- dilute Sto Bonding Agent with 3 parts water to one part Sto Bonding Agent by volume by adding clean, potable water to Sto Bonding Agent in a clean mixing pail and mixing with a high speed electric drill mixer. Follow normal mix ratio and procedures for mixing Sto Powerwall® Stucco (2.12B or C), except use diluted Sto Bonding Agent in lieu of water.

E. Sto BTS Plus--mix ratio with water: 6--8 quarts (5.7—7.6 L) of water per 60 pound (27 kg) bag of Sto-BTS Plus. Mix ½ bag at a time by pouring 3-4 quarts (2.8—3.8L) of clean potable water into a clean mixing pail. Add approximately ½ bag of Sto BTS-Plus, mix to a uniform consistency and allow to set for approximately 5 minutes. Adjust mix if necessary with additional Sto BTS-Plus or water and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent. Do not exceed maximum amount of water in mix ratio.

F. Sto Flexyl--mix ratio with Portland cement: 1:1 ratio by weight. Pour Sto Flexyl into a clean mixing pail. Add Portland cement, mix to a uniform consistency and allow to set for approximately five minutes. Adjust mix if necessary with additional Sto Flexyl and remix to a uniform trowel consistency. Avoid retempering. Keep mix ratio consistent.

G. Primer--mix with a clean, rust-free high speed mixer to a uniform consistency.

H. Finish--mix with a clean, rust-free high speed mixer to a uniform consistency. A small amount of water may be added to adjust workability. Limit addition of water to amount needed to achieve the finish texture.

I. Mix only as much material as can readily be used.

J. Do not use anti-freeze compounds or other additives.

PART 3 EXECUTION

3.01 ACCEPTABLE INSTALLERS

A. Pre-qualify under Quality Assurance requirements of this specification (section 1.07.B).

3.02 EXAMINATION

A. Inspect surfaces for:
1. Contamination—algae, chalkiness, dirt, dust, efflorescence, form oil, fungus, grease, laitance, mildew or other foreign substances.
2. Surface absorption and chalkiness.
3. Cracks—measure crack width and record location of cracks.
4. Damage and deterioration.
5. Moisture damage–-record any areas of moisture damage.

B. Inspect sheathing application for compliance with applicable requirement:

1. Glass Mat Faced Gypsum Sheathing—refer to manufacturer's instructions.

Note: wood-based sheathing must be gapped 1/8 inch (3mm) at edge and end joints to prevent cracking in the stucco.

C. Report deviations from the requirements of project specifications or other conditions that might adversely affect the stucco installation to the General Contractor.

3.03 SURFACE PREPARATION

A. Gypsum Sheathing in compliance with ASTM C79, Glass Mat Faced Gypsum Sheathing in compliance with ASTM C 1177, and Exterior or Exposure 1 wood-based sheathing (plywood and OSB [Oriented Strand Board]):

1. Verify installation of sheathing in compliance with applicable requirement.
2. Protect the substrate with a moisture barrier as required by the applicable code and install lath and accessories as in 3.04 B1—B6.

(Note: wood-based sheathing must be gapped 1/8 inch (3mm) at edge and end joints to prevent cracking in the stucco).

3.04 INSTALLATION

Apply the stucco in discrete panels without interruption to avoid cold joints and differences in appearance. Abut wet stucco to set stucco at natural or architectural breaks in the wall such as

expansion joints, pilasters, terminations, or changes in plane. Hot or dry conditions accelerate drying and moisture loss from stucco which can affect strength and resistance to cracking. Adjustments in the application, scheduling and curing of stucco to prevent rapid loss of moisture are necessary to achieve a satisfactory stucco installation. Cold temperatures retard drying and strength gain and adjustments may have to be made in the application, scheduling and curing of stucco to prevent damage from frost and other trades. Do not install stucco during extremely hot, dry and/or windy conditions. Do not install stucco during freezing conditions or on frozen substrates. Do not install
stucco onto grounds of accessories. Completely embed lath and flanges of accessories and completely cover attachments with stucco. Moist cure stucco minimum 48 hours for optimum strength gain and resistance to cracking. Allow final stucco application to completely dry before applying primer or finish. The finished installation must be true, plumb and square. Should stucco get into control or expansion joints, remove the stucco from within the joint before the stucco sets.

After satisfactory inspection of surfaces and correction of any deviations from specification requirements commence the stucco installation in accordance with A or B below.

A. Installation over frame construction with sheathing:

1. Weep Screed Installation
   a. Install foundation weep screed at the base of the wall securely to framing with the appropriate fastener. Locate foundation weep screed so that it overlaps the joint between the foundation and framing by a minimum of 1inch (25 mm). Locate the foundation weep screed minimum 4 inches (100 mm) above earth grade, 2 inches (51 mm) above finished grade (paved surfaces, for example).
2. Weather Protection
   a. Protect sills of rough openings with barrier membrane.
   b. Apply moisture barrier in compliance with the applicable building code. Wrap paper into rough opening and lap over barrier membrane at jambs. Lap paper over foundation weep screed attachment flange and window/door head flashings. Refer to Sto Details.

(Note: code requirements for weather protection vary. Always consult the applicable code and the manufacturer's code compliance report. Typically building paper in compliance with the code is attached directly to sheathing and lapped shingle style, upper courses over lower courses, by minimum 2 inches (51 mm), with vertical laps of minimum 6 inches (150 mm). Courses are staggered so that vertical joints do not align. Two layers of building paper are required over wood-based sheathing in areas of the United States under UBC (Uniform Building Code) jurisdiction. If paper-backed lath is used, the water resistant backing serves as the weather protection or as one of the two layers of paper required over wood-based sheathing. Care must be taken to prevent tears in the paper and to limit penetrations to only those required for attachment. Flashing must be in place and
properly integrated with the moisture barrier at sills, above windows and doors, decks and at roof/wall intersections such that water is directed to the exterior).

3. Casing Bead and Expansion Joint Installation
   a. Install casing beads at stucco terminations—doors, windows and other through wall penetrations. Install expansion joints (or back-to-back casing beads) at building expansion joints, where the stucco is to be installed over dissimilar construction or substrates, at changes in building height, at floor lines, columns, and cantilevered areas. Install one piece expansion joints at corners of windows,

doors, and similar through wall penetrations, and every 144 ft^2 (13 m^2). Install full accessory pieces where possible and avoid small pieces. Seal adjoining pieces by embedding ends in sealant. Abut horizontal into vertical joint accessories. Attach at no more than 7 inches (178 mm) into framing with appropriate fasteners.

Note: refer to architectural drawings for joint locations and accessory type. Moisture protection must be continuous behind joints and accessories.

4. Lath Installation
   a. Diamond Mesh Metal Lath
      i). General--install metal lath with the long dimension at right angles to structural framing. Terminate lath at expansion joints. Do no install continuously beneath joints.
      ii). Seams/Overlaps--overlap side seams minimum 1/2 inch (13 mm) and end seams minimum 1 inch (25 mm). Stagger end seams. Overlap casing beads and expansion joints minimum 1 inch (25 mm) over narrow wing accessories, minimum 2 inches (51 mm) over expanded flange accessories. Do not install lath continuously beneath expansion joints.
      iii). Attachment--fasten securely through sheathing into structural framing at 7 inches (178 mm) on center maximum vertically and 16 inches (406 mm) on center horizontally*. Wire tie at no more than 9 inches (225 mm) on center at: side laps, accessory overlaps, and where end laps occur between supports.
   b. Woven wire fabric lath—follow installation as for metal lath except overlap all seams by one mesh minimum.
   c. Paper-backed lath—follow installation as for metal lath. Lap lath over lath, not paper to lath overlap. For horizontal overlaps the paper backing must lap shingle style behind the lath to lath overlap.

(*Note: the type fastener selected, its layout and pullout or withdrawal value from the supporting construction must be verified and approved by the project engineer/architect with respect to design wind load and local building code requirements).

5. One Piece Expansion Joint Installation
   a. Install one piece expansion joints over lath at through wall penetrations, for example, above and below doors or windows (unless another type of expansion joint is already provided at these locations or one piece expansion joints are already provided as in 3.04 B3a). Install one piece expansion joints over lath every 144 ft^2 (13 m^2) (unless already provided as in 3.04 B3a.). Wire tie one piece expansion joints to lath at no more than 7 inches (178 mm) on center. Make certain lath is discontinuous beneath joints.
6. Inside and Outside Corners
   a. Install corner lath at inside corners and corner bead at outside corners over lath. Attach through lath into framing at no more than 7 inches (178 mm) on center with appropriate fasteners.
7. Stucco Installation*
   a. Scratch Coat: apply stucco with sufficient pressure to key into and embed the metal lath. Apply sufficient material, 3/8—1/2 inch (9—13mm), to cover the metal lath and to permit scoring the surface. Score the stucco upon completion of each panel in preparation for a second coat. Score horizontally.

b. Brown Coat: as soon as the first coat is firm enough to receive the second coat without damage, apply the second coat. Alternatively, moist cure the first coat up to 48 hours and dampen the scratched surface with water immediately before applying the second coat. Apply the second coat with sufficient pressure to ensure intimate contact with the first coat and as needed to bring the stucco to a uniform thickness that matches the grounds of the accessories. Use a rod or straight edge to bring the surface to a true, even plane. Fill depressions in plane with stucco. Final thickness of stucco shall be minimum ½ inch (13 mm), maximum 7/8 inch (22 mm). Refer to 1.04H.
After the stucco has become slightly firm float the surface lightly with a darby or wood float to densify the surface and to provide a smooth, even surface.

(Note: The proper time to float is when the wood float no longer sticks to the surface of the stucco).

c. Moist cure after the stucco has set by lightly fogging for at least 48 hours. Fog as frequently as required during the 48 hour period to prevent loss of moisture from the stucco. Avoid eroding the stucco surface with excess moisture. If relative humidity exceeds 75% the frequency of moist curing can be diminished.

(*Note: for one coat installation of stucco follow the procedure described above, except apply the stucco in one coat to ½ inch (13 mm) thickness, and eliminate scoring and the application of brown coat).

D. Primer Installation

1. Apply primer evenly with brush, roller or proper spray equipment over the clean, dry stucco and foam build-outs, and allow to dry thoroughly before applying finish.

E. Finish Installation

1. Apply finish directly over the stucco and foam build-outs when dry. Apply finish by spraying or troweling with a stainless steel trowel, depending on the finish specified. Follow these general rules for application of finish:
    a. Allow primed stucco wall surface to dry minimum 28 days.
    b. Avoid application in direct sunlight.
    c. Apply finish in a continuous application, and work a wet edge towards the unfinished wall area. Work to an architectural break in the wall before stopping to avoid cold joints.
    d. Weather conditions affect application and drying time. Hot or dry conditions limit working time and accelerate drying. Adjustments in the scheduling of work may be required to achieve desired results; cool or damp conditions extend working time and retard drying and may require added measures of protection against wind, dust, dirt, rain and freezing. Adjust work schedule and provide protection.
    e. Float "R" (rilled texture) finishes with a plastic float to achieve their rilled texture.
    f. Do not install separate batches of finish side-by-side.
    g. Do not apply finish into or over joints or accessories. Apply finish to outside face of wall only.
    h. Do not apply finish over irregular or unprepared surfaces, or surfaces not in compliance with the requirements of the project specifications.

3.05 PROTECTION

A. Provide protection of installed materials from water infiltration into or behind them.
B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing.
C. Provide protection of installed primer and finish from dust, dirt, precipitation, freezing and continuous high humidity until fully dry.

END OF SECTION 09 220

SECTION 09 260 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SUMMARY

A. Related sections:
1. Section 06100: Rough Carpentry.
2. Section 06200: Finish Carpentry.
3. Section 07210: Building Insulation.
4. Section 07840: Firestopping.
5. Section 07920: Joint Sealants.
6. Section 09510: Acoustical Ceilings.
7. Section 09723: Vinyl Wall Covering.
8. Section 09910: Paints.

1.1 REFERENCES

A. Standards of the following as referenced:
1. ASTM.
2. Association of Wall and Ceiling Industries International (AWCI).
3. Ceiling and Interior Systems Construction Association (CISCA).
4. Federal Specification (FS).
5. Gypsum Association (GA).
6. Painting and Decorating Trade Contractors of America (PDCA).
7. Underwriters' Laboratories, Inc. (UL).
8. Warnock Hersey (WH).

B. Industry standards:
1. ASTM C754-88: *Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum*.
2. ASTM C840-88: *Standard Specification for Application and Finish of Gypsum Board*.
3. AWCI, CISCA, GA, and PDCA developed: *Recommended Specifications on Gypsum Board Finish*, undated.
4. GA 600-92: *Fire Resistance Manual*, 13th Edition, April 1992.
5. GA 216: *Recommended Specifications for the Application and Finishing of Gypsum Board*, 1989.
6. WH: *1995 Certification Listings*.

1.2 SYSTEM DESCRIPTION

A. Design requirements:
1. Fire resistance ratings: Construct designated walls in accord with indicated UL design numbers.
2. Sound rating: Construct designated partitions in accord with manufacturer's submitted product data for obtaining indicated Sound Transmission Class (STC) ratings.
3. Finished ceilings and interior soffits maximum deflection: L/360.

1.3 SUBMITTALS

A. Product data:
1. Indicate product description, include compliance with specified requirements and installation requirements.
2. *"Manufacturer's Safety Data Sheets"*, (M.S.D.S.), for materials.

B. Samples:
1. Linear components: 1'-0" length for each item.
2. Sheet material: 1'-0" by 1'-0" piece showing end/edge.
3. Attachment devices to structure for suspended horizontal work.

C. Quality control submittals:
1. Design data: Attachment devices to structure for suspended horizontal work.
2. Certificates: Indicate materials supplied or installed are asbestos free.

1.4 QUALITY ASSURANCE

A. Mock-ups:
1. Interior suspended ceilings/soffits: Construct one room ceiling/soffit area, approximately 150 SF area, location designated by Contractor, on part of work to receive gypsum board to demonstrate actual expected Project conditions; include total suspension system, hangers, and sub-systems, and edge details.
2. Rework mock-up panels until accepted by Contractor for correct installation.
3. Gypsum board application to mock-up panels other than sample area is prohibited until all other ceiling or soffit areas have been installed and verified by Contractor to conform to approved mock-up.
4. Prepare and finish one room ceiling designated by Contractor, area not less than 100 SF, on part of work to receive ceiling finish specified below; indicate proposed texture, workmanship, and finish appearance.
5. Reapply mock-up panels until accepted by Contractor for finish and texture; remove unacceptable panel areas.
6. Maintain approved mock-up panel until entire ceiling finish application is accepted by Contractor.
7. Approved mock-up panel may form part of work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Storage:
1. Stack gypsum board off floor, on pallets providing continuous support for gypsum board to prevent sagging. Stack gypsum board to prevent long lengths over short lengths.
2. Store adhesives in dry area; protect against freezing.
3. Do not overload floor system above design loads.

1.6 PROJECT CONDITIONS

A. Install interior gypsum board only after building is enclosed.

B. Ventilation:
1. Ventilate during and following adhesive and joint treatment application.

2. Use temporary air circulators in enclosed areas lacking natural ventilation.
3. Allow additional drying time between coats of joint treatment, under slow drying conditions.
4. Protect installed materials from drafts during hot, dry weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers:
   1. Products specified as standard of quality are indicated in COMPONENTS Article.
   2. Products of manufacturers listed below meeting indicated standards and specified manufacturer's product data characteristics, except as modified below, are acceptable for use, subject to approval of product list and samples.

   3. Framing members and accessories:
      a) Dale/Incor.
      b) Dietrich Industries, Inc.
      c) Domtar Gypsum.
      d) Gold Bond Building Products/National Gypsum Company.
      e) Unimast, Inc.
   4. Gypsum products:
      a) Domtar Gypsum.
      b) Georgia-Pacific Corp.
      c) Gold Bond Building Products/ National Gypsum Company.
      d) U.S. Gypsum Company.

2.2 COMPONENTS

A. Framing members:
   1. Standard interior non-load bearing metal studs and floor and ceiling runners:
      a) Material, type, and shape:
      b) ASTM A568-85, 0.0179" uncoated thickness, minimum, commercial grade galvanized steel.
      c) Galvanizing: ASTM A525-87, coating designation G30; coated with not less than 0.3 oz. zinc PSF.
      d) 33 ksi minimum yield strength.
      e) Shape: ASTM C645-88.
   2. Studs: 1-1/4" minimum face width by depths and lengths indicated.
   3. Runners: 1" deep, minimum; widths required to receive studs and maintain friction between members, 20 gauge uncoated thickness minimum.
   4. Gauges:
      a) Typical wall construction: 25 gauge uncoated thickness minimum.
      b) Walls with ceramic tile as final finish: 20 gauge uncoated thickness minimum with respective gauge increase for below.
      c) Actual gauge required by partition height in accord with stud manufacturer's product data for height/gauge limitations.

B. Gypsum board:

1. Regular gypsum board: ASTM C36-85 (1988); 5/8" thickness, tapered edges.
2. Fire retardant gypsum board: ASTM C36-85 (1988); Type X, 5/8" thickness, tapered edges.
3. Water-resistant gypsum board:
   a) Type: ASTM C630-90.
   b) Thickness: Indicated.
   c) Types: Regular and Type X, tapered edges.
4. Cementitious backer units or tile backer board: Specified in Tile Section.

C. Sound control materials:
1. Sound attenuation batts: Specified in Building Insulation Section.
2. Acoustical sealant: Specified in Joint Sealants Section.
3. Acoustical tape: Closed cell, polyvinyl chloride (PVC) foam tape, 1/4" thickness by 1" wide.

D. Fire-rated insulation for rated assemblies: Specified in Firestopping Section.

E. Fasteners:
1. Metal runners and furring channels to following substrates; develop full loading characteristics without exceeding allowable stress design of member being fastened:
   a) Concrete: Hilti Fastening Systems; SDF 22, powder actuated fasteners; developing loading of 85 lbs. tension, minimum, 110 lbs. shear, minimum.
   b) Steel: Hilti Fastening Systems; ESD16, powder actuated fasteners providing full point penetration of steel member.
   c) Masonry: Powder actuated type capable of withstanding 193 lbs. single shear and 200 lbs. bearing force.
   d) Metal decking: ASTM C1002-88, Type S or S-12, pan head, size for application.
2. Framing members fastened together: ASTM C1002-88, Type S or S-12, pan head, size for application.
3. Screws for gypsum board application:
   a) Single layer gypsum board to metal framing: ASTM C1002-88, Type S or S-12 and ASTM C954-86, bugle head; size for applications.
   b) Gypsum board to gypsum board: ASTM C1002-88, Type G, 1-1/2" bugle head.
   c) Applications not listed: Conform to referenced standards and gypsum board manufacturer's product literature for conditions encountered.

F. Joint materials and Level 5 surfacing material:
1. Joint tape: ASTM C475-89; asbestos free and perforated; type recommended for board type use.
2. Joint compound: ASTM C475-89; vinyl base asbestos free, ready-mixed tape embedment and topping compounds; type recommended for board type use.
3. Level 5 surfacing material: U.S. Gypsum Company, Sheetrock First Coat.

G. Suspended gypsum board furring system:
1. Acceptable manufacturers:
   a) Armstrong World Industries, Inc.
   b) Celotex Corp.
   c) Chicago Metallic Corp.
   d) USG Interiors, Inc. Donn™.

2. Characteristics:
   a) Structural classification: ASTM C635-78, Heavy Duty.
   b) Tee and cap material:
   c) ASTM A568-85, 0.0179" uncoated thickness, minimum, commercial grade galvanized steel.
   d) Galvanizing: ASTM A525-87, coating designation G30; coated with not less than 0.3 oz. zinc PSF.
   e) Design: Double web.
   f) Tee size: 15/16" flange width; 1_" height, minimum, main tees; cross tees heights and material thicknesses required to meet specified structural classifications.
3. Attachment devices to structure: Specified in Accessories Paragraph below.

H. Accessories:
1. Corner reinforcement product quality standard: Unimast, Inc., SHEETROCK™ No. 800 Series; galvanized steel with 1-1/4" wide expanded metal flanges.
2. Metal jamb, ceiling, and casing "U" and "J" shaped trim providing edge protection and neat finished edges product quality standard: Unimast, Inc., SHEETROCK™ Trim No. 801 Series; 1-1/4" wide expanded metal flanges.
3. Control joints; product quality standard: Unimast, Inc., SHEETROCK™ Zinc Control Joint No. 093; roll-formed zinc alloy.
4. Resilient channel; product quality standard: Unimast, Inc., RC-1® Resilient Channel; ASTM A568-85, 25 gauge galvanized steel, minimum.
5. Lateral bracing, use either system:
   a) Channels and clip angles: ASTM C645-88, 16 gauge, minimum, galvanized steel 3/4" deep with 1/2" wide flange cold rolled channel and 2" by 2" by 16 gauge by 1/4" less than stud width length clip angle.
   b) Solid bridging: CR runners specified in Framing members Paragraph above and 1- 1/2" by 20 gauge electro-galvanized plate.
   c). Fasteners: Specified in Fasteners Paragraph.
6. Ceiling hanger wire: Minimum eight gauge annealed steel wire galvanized in accord with ASTM A641-82, Class I coating.
7. Tie wire: Minimum 18 gauge annealed steel wire galvanized in accord with ASTM A641-82, Class I coating.
8. Attachment devices for hanger wire to structure:
   a) Acceptable product line: ERICO Products, Inc.; Caddy Clip Fasteners.
   b) Characteristics:
   c) Formed metal or wire specifically designed for attachment to structural members.
   d) Model/type determined by individual attachment requirement, situation, UL Rating, and loading requirement.
9. Specialty accessories:
   9.1. Types:
      a) "F" molding: Fry Reglet Company; FDM series.
      b) "W" molding: Fry Reglet Company; WDM series.
      c) "J" molding: Fry Reglet Company; JDM series.
      d) Furnish other indicated shapes.
10. Material: 6063-T5 extruded aluminum alloy; dark bronze anodized finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Framing:
   1. Install steel framing members in accord with ASTM C754-88, tolerances indicated in APPLICATION Article, and as follows.
   2. Runners:
      a) Accurately align runners; fasten at 2'-0" O.C., maximum, and approximately 2" from runner ends with specified fasteners.
      b) Attach at floor and underside of structural deck for full height partitions with specified fasteners; space at 2'-0" O.C., maximum.
      c) Attach to ceiling suspension system for partitions indicated to terminate at ceiling; use 1/8" toggle bolts or sheet metal screws into "Tee", spline, or other members; space at 2'-0" O.C., maximum.
      d) Install runners indicated to receive rated insulation in two continuous beads of acoustical sealant in accord with ASTM C919-84.

B. Studs:
   1. Position full length studs vertically.
   2. Engage floor and ceiling runners. Attach with specified fasteners at floor and ceiling runners; attach each side of runner.
   3. Space as indicated, or, if not indicated, at 2'-0" O.C., maximum except as indicated below.
      a) Walls receiving tile specified in Tile Section: Space 20 gauge, minimum, studs 1'-4" O.C.
      b) Install double studs at interior and exterior corners, expansion joints, partition termination, and within 2" of door and borrowed lite openings in partitions. Locate next stud not more than 6" from double studs.
      c) Secure abutting and intersecting walls with fasteners through stud flanges.
      d) Install acoustical tape on metal studs in walls to receive rated insulation abutting other studs or dissimilar surfaces.

C. Lateral wall bracing:
   1. Channels and clip angles:
      a) Insert continuous cold rolled channel through stud web holes; 6" overlap at channel splice.
      b) Screw attach clip angle to each wall stud web and cold rolled channel. Use four screws at each stud; two screws each stud web; two screws at cold rolled channel.
   2. Solid bridging system:
      a) CR runner: Install cut-to-length sections with web-flange bent 90% at each end horizontally; fasten to adjacent vertical studs.
      b) Metal plate, one plate each side wall: Fasten continuous metal plate at each stud flange with one screw and four screws at each CR runner.
   3. Locations:
      a) Horizontally: Each door and borrowed lite frame head at jamb; 8'-0" O.C. maximum along wall face.
      b) Vertically; follow manufacturer's requirements if more stringent.
      c) Less than 6'-0": None required.
      d) Over 6'-0" and less than 10'-0": One row at 4'-0" AFF.
      e) Over 10'-0": One row at 4'-0" AFF and one additional row for each 6'-0" of

wall height or portion thereof.

D. Resilient channels: Attach to sound rated partitions or sound rated ceilings framing in accord with manufacturer's installation instructions to obtain STC classification indicated.

E. Suspended gypsum board furring system:
   1. Install suspension system in accord with applicable portions of ASTM C636-86.
   2. Attachment devices:
   3. General: Use attachment devices designed, sized, spaced, and attached to structural framing members utilizing anticipated ceiling load per hanger with safety factor of not less than five.
   4. UL Design requirements indicated or required: Size, space, and attach to structural framing members in accord with indicated UL design requirements utilizing anticipated ceiling load per hanger with safety factor of not less than five.

F. Hangers:
   1. Space hangers at 4'-0" O.C., maximum in each direction. Secure to building structure.
   2. Install additional hangers at ends of each suspension member and at each corner of lighting fixtures.
   3. Splay wires no more than 5" in 4'-0" vertical drop.
   4. Wrap wire minimum of three times horizontally, turning ends upward.
   4. Note: Use single length hanger wire from hanger attachment device at structure or structure itself to suspension system; splicing hanger wire is prohibited.

G. Space main tees at 4'-0" O.C. Space cross tees at 1'-4" O.C. perpendicular to main tees to form 1'-4" by 4'-0" grid system.

H. Level and square suspension system within specified tolerances.

I. Where grid system exists in an unrestrained condition, brace back to building structure using hanger wire, main tee, or carrying channel braces spaced at 4'-0" O.C., maximum.

J. Gypsum board, general:
   1. Install gypsum board in accord with manufacturer's product data and ASTM C840-88, except where more stringent requirements are specified.
   2. Use maximum lengths gypsum board to minimize end joints. Stagger end joints.
   3. Abut gypsum boards without forcing. Fit ends and edges of gypsum board. Do not place butt ends against tapered edges.
   4. Support ends and edges of gypsum board panels on framing or furring members.
   5. Water resistant board: Install on wet walls receiving vinyl wall covering or paint; use maximum sizes to minimize joints.

K. Gypsum board accessories:
   1. Install in accord with gypsum board manufacturer's product data and as follows.
      a) Control joints: Install in walls and ceilings at locations indicated, not exceeding 30'-0" O.C. Install rated back-up materials in rated partitions to

maintain rating integrity.
b) Corner beads: Install at external corners.
c) Metal trim shapes: Install at exposed edge of gypsum board at door and window openings, intersections with other materials, and intersection of walls with ceilings.

L. Specialty accessories: Install in accord with accessory manufacturer's installation instructions.

M. Sound attenuation batts: Install at indicated locations in accord with specified requirements.

N. Identify fire barrier partitions with stenciled red letters indicating **"FIRE AND SMOKE BARRIER"** at not more than 10'-0" O.C. each accessible partition side.

O. Coordinate installation of fire rated materials specified in Firestopping Section.

P. Gypsum board, single layer installation:

Q. Ceilings: Apply gypsum board with long dimension at right angle to framing. Terminate ends and edges of gypsum board on furring members.

R. Walls:
1. Apply in accord with UL Design requirements for rated construction; apply gypsum board vertically or horizontally at Trade Contractor's option for other walls.
2. Stagger end joints in opposite sides of partitions.
3. Terminate long edges or ends of gypsum board on framing or furring members.

S. Fastening: Attach in accord with indicated UL Designs where required, otherwise screw attach gypsum board to metal framing at 12" O.C., maximum at intermediate members, 8" O.C. at ends; use specified fasteners.

T. Gypsum board joints, angles, and fasteners treatment:
1. Apply joint compound to joints and angles in gypsum board and embed joint tape. Finish level requirements indicated in SCHEDULES Article below for joints, angles, fasteners, and accessories; allow drying between coats, featheredge and sand or damp sponge smooth each coat required by "Level #" indicated for final finish.
2. Fastener pop:
a) Repair fastener pop by installing second fastener approximately 1-1/2" from fastener pop and reseat fastener.
b) Where face paper is punctured, drive new fastener approximately 1-1/2" from defective fastener and remove defective fastener.
c) Fill damaged surface with compound and sand or damp sponge smooth to level of plane of gypsum board.
3. Fill cracks with compound; sand or damp sponge smooth and flush.
4. Dust surfaces; leave ready for final finishes specified in other sections.

3.2 APPLICATION

A. Tolerances for framing, unless indicated otherwise:

1. Variation from plumb: 1/4" in 10'-0" height, non-cumulative.
2. Variation in room horizontal squaring diagonals: 1/4".
3. Variation in walls from tangent line (straightness): 1/4" in 10'-0" non-cumulative.
4. Variation in location of walls from dimension: 1/4".
5. Location of dimensioned openings: 3/8".
6. Variation in rough opening size: 1/4",-1/8".

B. Tolerances in finished suspended ceilings:
1. Maximum deflection of suspension system components, hangers, and fastening devices supporting lighting fixtures, ceiling grilles, and acoustical units: L/360 of span; tested in accord with ASTM C635-78.
2. Bow, camber, and twist: Not exceeding tolerances established by ASTM C635-78.
3. Variation from level in finished ceiling: 1/8" in 12'-0".
4. Variation in plane of adjacent gypsum board panels prior to joint treatment: 1/16".

3.3 SCHEDULES

A. Finish levels are taken from, *Recommended Specifications on Gypsum Board Finish*, unless indicated otherwise:
1. Level 1:
a) Joints and interior angles: Tape embedded in joint compound; surfaces free of excess compound; tool marks and ridges acceptable.
b) Locations: Plenum areas above ceilings, areas where assembly is concealed by final construction, smoke barriers, and separation walls in attics.
2. Level 4:
a) Joints and interior angles: Tape embedded in joint compound.
b) Three separate coats joint compound applied over joints, interior angles, fastener heads, and accessories; surfaces free of excess compound; joint compound surfaces smooth and free of tool marks and ridges.
c) Locations: Appearance areas receiving flat paints, light texture finishes, or light or medium weight wall covering.
3. Level 5:
a) Joints and interior angles: Tape embedded in joint compound.
b) Apply three separate coats joint compound over joints, interior angles, fastener heads, and accessories; surfaces free of excess compound; joint compound surfaces smooth and free of tool marks and ridges.
c) Utilize either method for final procedure prior to final finish application:
d) Roll apply batter consistency mixture of gypsum board joint compound and water to surfaces; remove immediately with wide broadknife, without leaving ridges or gouges in finished surface. Allow to dry prior to prime coat application, OR;
e) Apply Level 5 surfacing material at 300-500 SF per gallon in accord with manufacturer's installation instructions; allow to dry.
4. Locations: Appearance areas receiving low luster, semi-gloss, gloss, or enamel finish paints or coatings, light texture finishes, light or medium weight wall covering, unbacked vinyl wall coverings, or severe light conditions.

END OF SECTION 09 260

SECTION 09 300 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Ceramic mosaic tile.
2. Stone thresholds installed as part of tile installations.
3. Waterproof membrane for thin-set tile installations.

B. Related Sections include the following:

1. Division 3 Section "Cast-in-Place Concrete" for monolithic slab finishes specified for tile substrates.
2. Division 7 Section "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
3. Division 9 Section "Gypsum Board Assemblies" for cementitious backer units glass-mat, water-resistant backer board.
4. Division 9 Section "Dimension Stone Tile."
5. Division 9 Section "Stone Paving and Flooring" for stone thresholds.

1.3 DEFINITIONS

A. Module Size: Actual tile size (minor facial dimension as measured per ASTM C 499) plus joint width indicated.

B. Facial Dimension: Actual tile size (minor facial dimension as measured per ASTM C 499).

C. Facial Dimension: Nominal tile size as defined in ANSI A137.1.

1.4 PERFORMANCE REQUIREMENTS

A. Static Coefficient of Friction: For tile installed on walkway surfaces, provide products with the following values as determined by testing identical products per ASTM C 1028:

1. Level Surfaces: Minimum 0.6.
2. Step Treads: Minimum 0.6.
3. Ramp Surfaces: Minimum 0.8.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

C. Samples for Initial Selection: For each type of tile and grout indicated. Include Samples of accessories involving color selection.

D. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required.
2. Assembled samples with grouted joints for each type and composition of tile and for each color and finish required, at least 12 inches (300 mm) square and mounted on rigid panel. Use grout of type and in color or colors approved for completed work.
3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6-inch (150-mm) lengths.
5. Metal edge strips in 6-inch (150-mm) lengths.

E. Product Certificates: For each type of product, signed by product manufacturer.

F. Qualification Data: For Installer.

G. Material Test Reports: For each tile-setting and -grouting product.

1.6 QUALITY ASSURANCE

A. Source Limitations for Tile: Obtain all tile of same type and color or finish from one source or producer.

1. Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from a single manufacturer and each aggregate from one source or producer.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section through one source from a single manufacturer for each product:

1. Stone thresholds.
2. Waterproofing.
3. Joint sealants.
4. Cementitious backer units.
5. Metal edge strips.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement in ANSI A137.1 for labeling sealed tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

D. Store liquid latexes and emulsion adhesives in unopened containers and protected from freezing.

E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern, and size indicated.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
1. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements, unless otherwise indicated.

2. For facial dimensions of tile, comply with requirements relating to tile sizes specified in Part 1 "Definitions" Article.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI standards referenced in "Setting and Grouting Materials" Article.

C. Colors, Textures, and Patterns: Where manufacturer's standard products are indicated for tile, grout, and other products requiring selection of colors, surface textures, patterns, and other appearance characteristics, provide specific products or materials complying with the following requirements:

1. Match Architect's samples.

D. Factory Blending: For tile exhibiting color variations within ranges selected during Sample submittals, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer, unless otherwise indicated.

1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

F. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.3 TILE PRODUCTS

A. Available Manufacturers:
1. American Olean; Div. of Dal-Tile International Corp.
2. Daltile; Div. of Dal-Tile International Inc.

B. Refer to drawings for selections.

C. Ceramic Mosaic Trim Units: Matching characteristics of adjoining flat tile and coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:

1. Base Cove: Cove, module size 1 by 1 inch (25.4 by 25.4 mm).
2. Base Cap for Thin-Set Mortar Installations: Surface bullnose, module size 1 by 1 inch (25.4 by 25.4 mm).
3. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size 1 by 1 inch (25.4 by 25.4 mm).
4. External Corners for Thin-Set Mortar Installations: Surface bullnose, module size 1 by 1 inch (25.4 by 25.4 mm).
5. Internal Corners: Cove, module size 1 by 1 inch (25.4 by 25.4 mm).
6. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch (12.7 to 6.35 mm) across nominal 4-inch (100-mm) dimension.

2.4 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, aligning lower edge of bevel with adjacent floor finish. Limit height of bevel to 1/2 inch (12.7 mm) or less, and finish bevel to match face of threshold.

B. Marble Thresholds: ASTM C 503 with a minimum abrasion resistance of 10 per ASTM C 1353 or ASTM C 241 and with honed finish.

1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.5 WATERPROOFING FOR THIN-SET TILE INSTALLATIONS

A. General: Manufacturer's standard product that complies with ANSI A118.10, selected from the following.

B. Unreinforced, Fluid-Applied Product: Liquid-latex rubber, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), in a consistency suitable for trowel application and intended for use as waterproofing.

1. Available Products:

a. Boiardi Products Corporation; Elastiment 324.
b. Custom Building Products; LevelQuick Waterproofing and Anti-Fracture Membrane.
c. Jamo Inc.; Waterproof.

C. Latex-Portland Cement Product: Flexible mortar consisting of cement-based mix and acrylic-latex additive.

1. Available Products:

a. Boiardi Products Corporation; Elastiment 323.
b. MAPEI Corporation; PRP 315.
c. Southern Grouts & Mortars, Inc.; Southcrete 1100.
d. TEC Specialty Products Inc.; TA-324, Triple Flex.

D. Urethane Waterproofing and Tile-Setting Adhesive: One-part liquid-applied urethane, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), in a consistency suitable for trowel application and intended for use as both waterproofing and tile-setting adhesive in a two-step process.

1. Available Products:

a. Bostik; Hydroment Ultra-Set.
b. Southern Grouts & Mortars, Inc.; Deck-Seal 1000.

2.6 SETTING AND GROUTING MATERIALS

A. Available Manufacturers:

1. Atlas Minerals & Chemicals, Inc.
2. Boiardi Products Corporation.
3. Bonsal, W. R., Company.
4. Bostik.
5. C-Cure.
6. Custom Building Products.
7. DAP, Inc.
8. Jamo Inc.
9. LATICRETE International Inc.
10. MAPEI Corporation.
11. Southern Grouts & Mortars, Inc.
12. Summitville Tiles, Inc.
13. TEC Specialty Products Inc.

B. Water-Cleanable, Tile-Setting Epoxy Adhesive: ANSI A118.3, with a VOC content of 65 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Standard Sanded Cement Grout: ANSI A118.6, color as indicated.

2.7 ELASTOMERIC SEALANTS

A. General: Provide manufacturer's standard chemically curing, elastomeric sealants of base polymer and characteristics indicated that comply with applicable requirements in Division 7 Section "Joint Sealants."

1. Use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. Available Products:

a. Dow Corning Corporation; Dow Corning 786.
b. GE Silicones; Sanitary 1700.
c. Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.
d. Tremco, Inc.; Tremsil 600 White.

D. Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

1. Available Products:

    a. Bostik; Chem-Calk 550.
    b. Mameco International, Inc.; Vulkem 245.
    c. Pecora Corporation; NR-200 Urexpan.
    d. Tremco, Inc.; THC-900.

E. Chemical-Resistant Sealants: For chemical-resistant floors, provide chemical-resistant elastomeric sealant of type recommended and produced by chemical-resistant mortar and grout manufacturer for type of application indicated, with proven service record and compatibility with tile and other setting materials, and with chemical resistance equivalent to mortar/grout. Include primer and backer rod recommended by manufacturer.

2.8 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications, stainless steel; ASTM A 666, 300 Series exposed-edge material.

C. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

D. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.

1. Available Products:

    a. Bonsal, W. R., Company; Grout Sealer.
    b. Bostik; CeramaSeal Grout Sealer.
    c. C-Cure; Penetrating Sealer 978.
    d. Custom Building Products; Grout and Tile Sealer.
    e. Jamo Inc.; Penetrating Sealer.
    f. MAPEI Corporation; KER 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.
    g. Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.
    h. Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.
    i. TEC Specialty Products Inc.; TA-256 Penetrating Silicone Grout Sealer.

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.

1. Verify that substrates for setting tile are firm; dry; clean; free of oil, waxy films, and curing compounds; and within flatness tolerances required by referenced ANSI A108 Series of tile installation standards for installations indicated.
2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
3. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.

B. Provide concrete substrates for tile floors installed with adhesives that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards.

1. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer.
2. Remove protrusions, bumps, and ridges by sanding or grinding.

C. Blending: For tile exhibiting color variations within ranges selected during Sample submittals, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

D. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 INSTALLATION, GENERAL

A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.

B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.

F. Lay out tile wainscots to next full tile beyond dimensions indicated.

G. Expansion Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Locate joints in tile surfaces directly above joints in concrete substrates.
2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

H. Grout tile to comply with requirements of the following tile installation standards:

1. For ceramic tile grouts (sand-portland cement; dry-set, commercial portland cement; and latex-portland cement grouts), comply with ANSI A108.10.
2. For chemical-resistant epoxy grouts, comply with ANSI A108.6.

I. At showers, tubs, and where indicated, install cementitious backer units and treat joints to comply with ANSI A108.11 and manufacturer's written instructions for type of application indicated.

3.4 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and waterproofing manufacturer's written instructions to produce waterproof membrane of uniform thickness bonded securely to substrate.

B. Install crack-suppression membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness bonded securely to substrate.

C. Do not install tile over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.5 FLOOR TILE INSTALLATION

A. General: Install tile to comply with requirements in the Floor Tile Installation Schedule, including those referencing TCA installation methods and ANSI A108 Series of tile installation standards.

1. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.
   a. Tile floors in wet areas.
   b. Tile floors composed of rib-backed tiles.

B. Joint Widths: Install tile on floors with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).

C. Stone Thresholds: Install stone thresholds at locations indicated; set in same type of setting bed as abutting field tile, unless otherwise indicated.

1. Set thresholds in latex-portland cement mortar for locations where mortar bed would otherwise be exposed above adjacent nontile floor finish.

D. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

E. Grout Sealer: Apply grout sealer to cementitious grout joints according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer that has gotten on tile faces by wiping with soft cloth.

3.6 WALL TILE INSTALLATION

A. Install types of tile designated for wall installations to comply with requirements in the Wall Tile Installation Schedule, including those referencing TCA installation methods and ANSI setting-bed standards.

B. Install metal lath and scratch coat for walls to comply with ANSI A108.1A, Section 4.1.

C. Joint Widths: Install tile on walls with the following joint widths:

1. Ceramic Mosaic Tile: 1/16 inch (1.6 mm).

3.7 CLEANING AND PROTECTING

A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove epoxy and latex-portland cement grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions, but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. When recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.

C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION 09 310

SECTION 09 510 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Related sections:
1. Section 09260: Gypsum Board Assemblies.

1.2 REFERENCES

A. Standards of the following as referenced:
1. ASTM.

1.3 SUBMITTALS

A. Product data:
1. Manufacturer's product data and installation instructions.
2. *"Manufacturer's Safety Data Sheets",* (M.S.D.S.), for materials.

B. Shop drawings; include:
1. Lay-out including locations of lighting fixtures and grilles.
2. Attachment devices to structure.
3. Insert and hanger spacing and fastening details.
4. Splicing method for main and cross runners.
5. Change in level details.
6. Support at lighting fixtures.

C. Samples:
1. 6" by 6" samples of each type acoustical material specified.
2. 1'-0" length of each suspension member.
3. Attachment devices to structure.

D. Quality control submittals:
1. Certificates: Indicate materials supplied or installed are asbestos free.

1.5 QUALITY ASSURANCE

A. Mock-ups:
1. Install complete ceiling of each type specified, in space designated by Architect. Notify Architect when spaces are ready for observation.
2. Following Architect's acceptance, retain mock-up as standard of quality for ceiling installation. Accepted mock-up may remain as part of finished work.

1.6 PROJECT CONDITIONS

A. Environmental requirements:
1. Relative humidity: Maintain within manufacturer's recommended range for specified materials.
2. Maintain uniform temperature in range of 60%F. to 85%F. for at least 48 hours prior to installation and after installation for Project duration.

1.7 SEQUENCING AND SCHEDULING

A. Schedule acoustical material installation to minimize need for removal and replacement of acoustical units to accommodate construction activities specified in other sections.

1.8 MAINTENANCE

A. Extra materials:
   1. Furnish extra materials equal to one percent of each type of acoustical material supplied; round off quantity furnished to nearest full unbroken carton.
   2. Furnish suspension system components in amount sufficient to install extra ceiling units.
   3. Store on Project site where directed by Architect.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers:
   1. Products specified as standard of quality are indicated in COMPONENTS Article.
   2. Products of manufacturers listed below meeting indicated standards and specified manufacturer's product data characteristics, except as modified below, are acceptable for use, subject to approval of product list and samples.

B. Ceiling suspension systems:
   1. Armstrong World Industries, Inc.
   2. Celotex Corp.
   3. Chicago Metallic Corp.
   4. USG Interiors, Inc. Donn™.

C. Acoustical panels and tile:
   1. Armstrong World Industries, Inc.
   2. Celotex Corp.
   3. USG Interiors, Inc.

2.2 COMPONENTS

A. Standard exposed ceiling suspension grid system:
   1. Structural characteristics: ASTM C635-86, Intermediate Duty.
   2. Module: 24" by 24".
   3. Main and cross tees:
      a) Tee and cap material:
      b) ASTM A568-85, 0.0179" uncoated thickness, minimum, commercial grade galvanized steel.
      c) Galvanizing: ASTM A525-87, coating designation G30; coated with not less than 0.3 oz. zinc PSF.
      d) Design: Double web.
      e) Tee size: 15/16" flange width; 1_" height, minimum, main tees; cross tees heights and material thicknesses required to meet specified structural

classifications.

4. Edge molding: Minimum 0.020" thickness steel; same criteria as grid; channel or angle shaped with minimum 3/4" flange width, hemmed edge.
5. Finish on exposed components: Manufacturer's standard factory applied, low gloss, baked-on paint; color matching panel color.

B. Acoustical ceiling panels:
   1. Product quality standard: Armstrong, Inc.; Endura and Clean Room VL.
   2. Characteristics:
      a) Size: 24" by 24".
      b) Thickness: 5/8".
      c) Edges: Tegular (Revealed).
      d) Furnish factory finished openings for speakers and recessed light fixtures; finish opening with same edge detail as panel edge, factory painted to match panel; coordinate sizes with fixtures.
      e) Colors: White.
      f) Manufacturers pattern noted in Finish Schedule as APC-#.

C. Metal Ceiling Tiles
   1. Product quality standard: Steel Ceilings, Inc., 800-848-0496
   2. Characteristics:
      a) Size: 24" x 24".
      b) Thickness: 20 gauge.
      c) Edges: Square Edge.
      d) Finish: Stainless Steel.
      e) Location: Kitchen ceiling only. See drawings for location of panels.

2.3 ACCESSORIES

A. Accessories:
   1. Hold down clips: Suspension system manufacturer's standard design compatible with ceiling panels.
   2. Hanger wire: ASTM A641-89, minimum 12 gauge, galvanized, soft temper steel wire; pre-stretched.
   3. Wire ties: 18 gauge, galvanized, annealed steel wire.
   4. Attachment devices for hanger wire to structure:
      a) Acceptable product line: ERICO Products, Inc.; Caddy Clip Fasteners.
      b) Characteristics:
      c) Formed metal or wire specifically designed for attachment to structural members.
      d) Model/type determined by individual attachment requirement, situation, UL Rating, and loading requirement.

B. Sound attenuation blankets: Specified in Building Insulation Section.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Suspension system installation:

1. Install suspension system in accord with applicable portions of ASTM C636-86 except for paragraph 2.3.1 level tolerance. Use level tolerance indicated below.
2. Attachment devices:
   a) General: Use attachment devices designed, sized, spaced, and attached to structural framing members utilizing anticipated ceiling load per hanger with safety factor of not less than five.
   b) UL Design requirements indicated or required: Size, space, and attach to structural framing members in accord with indicated UL design requirements utilizing anticipated ceiling load per hanger with safety factor of not less than five.
3. Hangers:
   a) Space hangers for main tees at 4'-0" O.C. Secure to building structure using attachment devices indicated in reviewed shop drawings.
   b) Install additional hangers at ends of each suspension member and at each corner of lighting fixtures.
   c) Splay wires no more than 5" in 4'-0" vertical drop.
   d) Where spacing of hangers for main tees exceeds maximum specified spacing due to interference of adjacent construction, indirect hang tees using carrying channels to maintain maximum hanger spacing.
   e) Wrap wire tightly, minimum three times horizontally, turning ends upward.
   f) NOTE: Use single length hanger wire from hanger attachment device at structure or structure itself to suspension system; splicing hanger wire is prohibited.
4. Direct hung, exposed grid system, 2'-0" by 2'-0" module:
   a) Space main tees at 4'-0" O.C., maximum.
   b) Space cross tees at 2'-0" O.C. perpendicular to main tees.
   c) Space cross tees at 2'-0" O.C. perpendicular to previously installed cross tees to form 2'-0" by 2'-0" grid module. Connect to main tees through slots in main tees.
5. Level and square suspension system components within specified tolerances prior to beginning ceiling material installation.
6. Install cross tees adjacent to lighting fixtures and grilles on each side not supported by main tees.
7. Wall moldings:
   a) Install wall molding at intersection of suspended ceiling and vertical surfaces.
   b) Miter corners where wall moldings intersect or install corner caps.
   c) Attach to vertical surfaces with mechanical fasteners.
8. Where grid system exists in unrestrained condition, brace back to building structure using hanger wire, main tee, or carrying channel braces at 4'-0" O.C., maximum.

B. Acoustical unit installation:
1. Install acoustical units in level plane in straight line courses, within allowable tolerances; use three carton mix.
2. Place materials to lay flush on suspension members.
3. Install in symmetrical pattern about centerline of area, unless otherwise indicated. Lay out units having directional pattern in same direction.
4. Where cutting of acoustical units is required, cut in manner to conceal cut or damaged edges in finished work.
5. Hold down clips:
   a) Install acoustical units surrounding recessed troffer lights with hold down clips to prevent movement or displacement of units.

b) Install hold down clips at ceiling panels within 10'-0" of exterior doors.

6. Lay sound attenuation blankets over designated ceiling areas, insulation supported by suspension system; grid support not to exceed 24". Laying blankets directly on, and supported totally by, ceiling panels is prohibited.

C. Tolerances:
   1. Maximum deflection for suspension system components, hangers, and fastening devices supporting lighting fixtures, ceiling grilles, and acoustical units: L/360 of span, tested in accord with ASTM C635-83.
   2. Bow, camber, and twist: Not exceeding tolerances established by ASTM C635-83.
   3. Variation from level in finished ceiling: 1/8" in 12'-0".

3.2 CLEANING

A. Clean soiled or discolored unit surfaces after installation.

B. Touch-up scratches, abrasions, voids, and other defects in painted metal surfaces.

C. Remove and replace damaged and stained acoustical units with new units; using stockpiled units is prohibited.

END OF SECTION 09 510

SECTION 09 622 - RUBBER RECREATIONAL AND ATHLETIC FLOORING

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes: Recycled rubber flooring

B. Related Sections: Section(s) related to this section include:

1. Section 03 – Concrete Substrate.

1.02 REFERENCES

A. Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. The Standards listed here are identified with a designation number, title or other designation established by the issuing authority.

B. American Society for Testing and Materials (ASTM):

1. ASTM D2240 Shore Hardness
2. ASTM D792 Density
3. ASTM D412 Tensile Strength / Elongation
4. ASTM D3574 Rebound
5. ASTM C501 Taber Abrasion
6. ASTM E684 Flammability
7. ASTM E84 Smoke Developed
8. ASTM D395B Compression Set
9. ASTM D1149-86 Ozone Exposure
10. ASTM D750 Aging Resistance
11. ASTM F970 Static Load Limit
12. ASTM E648-97 Critical Radiant Flux
13. ASTM C1028-89 Static Coefficient of Friction
14. ASTM D3676 Density Foam Test
16. ASTM D5116 Material Emissions – VOC
18. ASTM E492-96 Sound Impact Transmission
19. ASTM F150 Electrical Resistance (Borroughs)
20. ASTM F970-97 Static Load

1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide resilient recycled rubber flooring system and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants and leveling compounds, all of which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with the Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product data: Submit product data, including manufacturer's specification sheet and installation instructions for specified products. Include methods of installation and substrate preparation for each type of substrate.

C. Samples: Submit samples for each type and color of resilient recycled rubber flooring and accessories required. Provide 12-inch square samples of flooring materials.

D. Quality Assurance Submittals: (1) Certified test reports showing compliance with specified performance characteristics and physical properties, (2) Bond and moisture tests with location diagrams and results, and (3) Manufacturer's Installation Instructions.

E. Closeout Submittals: (1) Cleaning & Maintenance Data (Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance), and (2) Warranty.

1.05 QUALITY ASSURANCE

A. Installer: Installer should be highly experienced in performing work of this section, having previously done work similar to that required for this project.

1.06 SEQUENCING/SCHEDULING

A. Ordering: Comply with Manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

B. Delivery: Deliver materials in Manufacturer's original, unopened, undamaged packaging.

C. Storage: Store materials at temperature and in humidity conditions recommended by manufacturer and protect from exposure to harmful weather conditions. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation.

D. Installation: Except as otherwise indicated herein, sequencing or scheduling for performance of work of this section in relation with other work is Contractor's option. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieved bond with adhesive as determined by the resilient recycled rubber flooring manufacturer's recommended bond and moisture test. Do not take tests later than ten days prior to scheduled installation. Notify Architect immediately of unsatisfactory conditions.

1.07 PROJECT CONDITIONS

A. Temperature: Maintain minimum temperature as recommended by Manufacturer, but not less than 65 degrees Farenheit (18 degrees Celcius) in spaces to receive resilient flooring for at

least 48 hours prior to installation, during installation and for not less than 48 hours after installation. Subsequently, maintain minimum temperature of 55 degrees Farenheit (13 degrees Celcius) in areas where work is completed.

B. Moisture: Prior to floor finish installation, take moisture tests on all concrete floors regardless of age or grade level. The test shall be a calcium chloride test. Conduct one test for every 1,000 or less square feet of resilient flooring. Conduct tests around the perimeter of the room, at columns and where moisture may be evident. The moisture emission from the concrete shall not exceed 3.0 pounds per 1,000 square feet per 24 hours. Submit a diagram of the area showing the location and results of each test to the Architect, Owner, Construction Manager or General Contractor. If the test results exceed the limitations do not proceed with the installation until the problem has been corrected.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

A. "Decathlon Custom Multicolored Recycled Rubber Tile" by Dzynspec, 37 Shumate Avenue, Stoughton, MA, 02072; local tele rep: 404.874.2787.

2.02 MATERIALS

A. Provide **Decathlon Custom**™ black recycled rubber tiles with EPDM colored granules as follows:
1. Tile Size: 38" X 38" Square
2. Edges: Square
3. Thickness: 1/4" (6mm)
4. Color, size, style: #004MBS CUSTOM Multicolored, 5% Black, 10% Purples, 5% Royal Blue, 5% Red, 20% Green 401, 30% Brown, 10% Maroon, 5% Beige, 10% Eggshell

B. Product Testing
1. ASTM C501 Taber Abrasion:0.8% wt loss
2. ASTM C1028-89 Static Coefficient of Friction: Dry 0.77, Wet 0.90
3. ASTM D2240 Hardness Shore A Durometer: 64 indentation hardness
4. ASTM D3676 Density Foam Test: 66.0 lbs/cubic foot
5. ASTM D395B Compression Set Under Force: 96.3% recovered
6. ASTM D412 Tensile Strength: 290.2 lbs/square inch
7. ASTM D5116 Material Emissions – VOC: Pass
8. ASTM E492-96 Sound Impact Transmission: IIC 59
9. ASTM E648 Critical Radiant Flux (New York): Class II (0.41 watts/square centimeter) (Note to 10. ASTM F150 Electrical Resistance (Borroughs):
11. ASTM F970-97 Static Load

2.03 PRODUCT SUBSTITUTIONS

A. Substitutions: No substitutions permitted.

PART 3 – EXECUTION

3.01 SUBSTRATE PREPARATION

A. Examine substrates and conditions where resilient recycled rubber flooring will be installed. Require installer to inspect sub-floor surfaces to determine that they are satisfactory. A satisfactory sub-floor surface is defined as one that is dry, smooth, and free from cracks, holes, ridges, sealers or coatings preventing adhesive bond and other defects impairing performance or appearance. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by flooring manufacturer. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Preparations: (1) Leveling: Use leveling and patching compounds as recommended by flooring manufacturer for filling small cracks, holes and depressions and leveling sub-floors. This contractor shall be responsible for leveling new or existing floors whose surface varies up to 5/16". Notify Owner, Architect and General Contractor in writing where substrate varies more than above before proceeding with the work. (2) Cleaning: Remove coatings from sub-floor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paints, oils, waxes and sealers. Broom clean or vacuum surfaces to be covered, and inspect sub-floor. (3) Priming: Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's direction.

B. Field Verification: Field verify, prior to installation, exact layout dimensions of all seams, floor patterns, grain directions and insets with Architect. Start of work without Architect approval of field verification is not permitted and unauthorized installations shall be replaced at Contractors expense.

C. General:

1. Strictly comply with manufacturer's installation instructions and recommendations.

2. Adhere resilient flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

3. Where moveable partitions are shown, install resilient flooring before partitions are erected.

4. Extend flooring into toe spaces, door reveals and into closet and similar openings. Scribe, cut and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

5. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on sub-floor. Use chalk or other nonpermanent-marking device.

6. Tightly cement edges to perimeter of floor around covers and to covers. Tightly cement flooring to sub-base without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks or other surface imperfections.

D. Installing resilient flooring tiles / panels:

1. Match tiles for color and pattern by using tile from cartons in same sequence as manufactured and packaged if so numbered.

2. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.

3. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable. Generally, lay tile with grain running in one direction unless shown or directed otherwise. Verify grain directions with Architect prior to installation.

3.03 CLEANING AND PROTECTION

A. General Cleaning: Refer to Manufacturer's Cleaning and Maintenance Instructions.

B. Post Installation Cleaning: Sweep or vacuum floor thoroughly. Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well sealed in adhesive. Damp mop floor being careful to remove marks and excessive soil. Remove any excess adhesive or other surface blemishes, using appropriate, non-abrasive cleaner recommended by flooring manufacturer.

C. Protection: Protect installed product and finish surfaces from damage during construction and until acceptance. Cover resilient flooring with un-dyed, un-treated building paper until inspection for Substantial Completion.

D. Inspection Cleaning: Clean resilient flooring not more than four days prior to date scheduled for inspections intended to establish date of Substantial Completion in each area of project. Clean resilient flooring by method recommended by resilient flooring manufacturer.

E. Owner's Personnel: Instruct Owner's personnel in proper maintenance procedures.

3.04 EXTRA MATERIALS

A. General: Furnish extra materials from same manufactured lot as materials installed. Deliver to Owner enclosed in protective packaging with appropriate identifying labels.

B. Resilient Recycled Rubber Tiles: Furnish not less than one box for 50 boxes or fraction thereof, for each type, color, pattern and size installed.

END OF SECTION 09 622

SECTION 09 650 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
1. Rubber floor tile.
2. Vinyl composition tile (VCT).
3. Resilient wall base and accessories.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Initial Selection: For each type of product indicated.

C. Samples for Verification: Full-size units of each color and pattern of resilient floor tile required.

1. Resilient Wall Base and Accessories: Manufacturer's standard-size Samples, but not less than 12 inches (300 mm) long, of each resilient product color and pattern required.

D. Maintenance Data: For resilient products to include in maintenance manuals.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store tiles on flat surfaces.

1.5 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C), in spaces to receive floor tile during the following time periods:

1. 48 hours before installation.
2. During installation.
3. 48 hours after installation.

B. After postinstallation period, maintain temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

E. Install resilient products after other finishing operations, including painting, have been completed.

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.
2. Resilient Wall Base and Accessories: Furnish not less than 10 linear feet (3 linear m) for every 500 linear feet (150 linear m) or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide products from one of the following manufacturers:
1. Armstrong World Industries, Inc.
2. Mannington Mills, Inc..

2.2 COLORS AND PATTERNS

A. Colors and Patterns: As indicated on the drawings.

B. Class: 1 (solid-color tile).

C. Wearing Surface: Smooth.

D. Thickness: 0.125 inch (3.2 mm).

E. Size: 12 by 12 inches (305 by 305 mm).

F. Fire-Test-Response Characteristics:

1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E 648.

2.3 RESILIENT WALL BASE

A. Wall Base: ASTM F 1861.
1. Armstrong World Industries, Inc.
2. Johnsonite.
3. Roppe Corporation.
4. VPI, LLC, Floor Products Division.

B. Style: Cove

C. Minimum Thickness: 0.125 inch (3.2 mm).

D. Height: As scheduled on drawings

E. Lengths: Cut lengths 48 inches (1219 mm) long or coils in manufacturer's standard length.

F. Outside Corners: Premolded.

G. Inside Corners: Premolded.

H. Surface: Smooth.

2.4 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic cement based formulation provided or approved by resilient product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances, moisture content, and other conditions affecting performance.

1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Concrete Substrates: Prepare according to ASTM F 710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
3. Moisture Testing:

    a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
    b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

C. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.

D. Use trowelable leveling and patching compound to fill cracks, holes, and depressions in substrates.

E. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.

1. Do not install resilient products until they are same temperature as space where they are to be installed.

F. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 TILE INSTALLATION

A. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

1. Lay tiles in pattern indicated.

B. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

1. Lay tiles in pattern of colors and sizes indicated.

C. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend tiles into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent, nonstaining marking device.

F. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 RESILIENT WALL BASE INSTALLATION

A. Apply wall base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

B. Install wall base in lengths as long as practicable without gaps at seams and with tops of adjacent pieces aligned.

C. Tightly adhere wall base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

D. Do not stretch wall base during installation.

E. Premolded Corners: Install premolded corners before installing straight pieces.

3.5 CLEANING AND PROTECTION

A. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.
2. Sweep and vacuum surfaces thoroughly.
3. Damp-mop surfaces to remove marks and soil.

    a. Do not wash surfaces until after time period recommended by manufacturer.

B. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

1. Apply protective floor polish to horizontal surfaces that are free from soil, visible adhesive, and surface blemishes if recommended in writing by manufacturer.

    a. Use commercially available product acceptable to manufacturer.
    b. Coordinate selection of floor polish with Owner's maintenance service.

END OF SECTION 09 650

SECTION 09 670 - EPOXY RESIN COMPOSITION FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Poured seamless floor covering.

B. Related Sections include the following:

1. Section 03300, “Cast-In-Place Concrete.
2. Section 1500, “Plumbing Accessories”

1.3 SUBMITTALS

A. See Division 1, General Conditions.

B. Manufacturer’s descriptive data and specific recommendations for mixing, application and curing.

C. Manufacturer’s Material Safety Data Sheets (MSDS) for each respective product being used.

D. Samples for Initial Selection: Manufacturer's color charts consisting of sections of units showing the full range of colors and patterns available for each type of product indicated. Actual samples 2-1/2” x 4-0” of product specified.

E. Maintenance Instructions: Submit manufacturer’s written instructions for recommended maintenance practices.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has specialized in installing resinous flooring types similar to that required for this Project and who is certified thru the manufacturer.

B. Source Limitations: Obtain type and color of floor covering specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

C. The finished flooring system shall be uniform in color, texture and appearance. All edges that terminate at walls, floor discontinuities and other embedded items shall be sharp, uniform and cosmetically acceptable, using plastic edge strips of the proper height wherever possible.

1.5 DELIVERY, STORAGE, AND HANDLING

A. All materials shall be delivered in original manufacturer's sealed containers, with all pertinent labels intact and legible.

B. Store products in dry spaces protected from the weather, with ambient temperatures maintained between 35 and 80 deg F.

1.6 PROJECT CONDITIONS

A. The material and air temperatures shall be in the range of 55 to 85 deg F. during application and cure.

B. Maintain a uniform temperature throughout the work area without drafts. Air currents shall be diffused so as not to be blown directly on or across flooring until it is fully cured. Maintain a minimum temperature of 65 deg for a period of 48 hours prior to commencement of work and for a period of two (2) weeks after the product installation has been completed.

C. The relative humidity in the specific location of the application shall be less that 85% and the surface temperature shall be at least 5 deg above the dew point.

D. The surfaces to be covered shall have been prepared as specified by the manufacturer's written instructions.

E. Permanent lighting shall be in place and working before installing resinous flooring.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products specified as standard of quality, Tnemec Company, Inc., 1C 22-Q102 Deco-Tread Quartz; 1C 284-000 Deco Clear.

B. Products of manufacturers that meet or exceed the listed minimum physical property requirements when tested according to the referenced standard test method in parentheses are acceptable for use, subject to prior approval of proposed product list:
1. Compressive Strength (ASTM C-579)- 11,000psi
2. Tensile Strength (ASTM C-307)- 1643 psi
3. Flexural Modulus of Elasticity (ASTM C-580)- 4,300 psi
4. Water Absorption (MIL D-3134)- 0.3 percent max.
5. Surface Hardness (ASTM D-2240) 85.5 Durometer "D"{
6. Abrasion Resistance (ASTM D-1044)- 0.0 gr.
7. Impact Resistance (MIL-D-3134, Para 4.7.3)- 0.024" max. (No chipping, cracking, loss of adhesion.)

8. Impact Resistance (Gardner Impact Tester)- No chipping, cracking or delamiation and not more that 0.014" indentation.
9. Adhesion (A.C.I. Comm. No. 503.1)- 400psi (100% failure in concrete)
10. Electrical Conductivity (NFPA 56A)- Di-electric
11. Flammability-Critical Radiant Flux (ASTM E-648)- Greater than 1.07 watts/cm2

2.2 SUPPLEMENTAL MATERIALS

A. Anti-Microbial Additive: Incorporate antimicrobial chemical additive to prevent growth of most bacteria, fungi, algae and actinomycetes.

B. Textured Top Coat: type recommended or produced by manufacturer of epoxy resin matrix flooring system for type and profile of desired final finish.

2.3 MATERIAL PREPARATION

A. Preparation of gauging solution and mixing of all materials shall be in strict accordance with the manufacturer's specific instructions and procedures, considering the area to be worked and the ambient temperature and humidity.

B. Stage materials bags and liquid components in an orderly manner that will support an efficient sequence of opening and mixing efforts.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine all surfaces to be covered with these materials and report any conditions that adversely affect the appearance or performance of the flooring system and which cannot be put into acceptable condition by the preparatory work.

B. Do not proceed with surface preparation and application until the surface is acceptable or authorization to proceed is given by the Design/Builder.

C. Ensure that adequate lighting has been installed to support the surface preparation and application efforts.

D. If there are areas in the floor that must be filled to satisfy grade or drainage requirements, refer to the manufacturer's recommendations and procedures for materials and techniques.

3.2 PREPARATION

A. The concrete in floors to be covered with these materials must have been cured a minimum of 28 days at or above 70 deg. And must be visibly dry at the surface. Follow specific manufacturer's recommendations for concrete curing at temperatures below 70 deg. Do not use curing agents or hardeners that remain on or in the concrete's surface.

B. New concrete should be shot-blast, acid etched or power scarify as required to obtain optimum bond of flooring to concrete. Remove sufficient material to provide a sound surface free of laitance, glaze, efflorescence and any bond-inhibiting curing compounds or form release agents. Remove grease, oil, and other penetrating contaminates. Repair damaged and deteriorated concrete to acceptable condition. Leave surface free of dust, dirt, laitance, and efflorescence. The floor must be flat and true with proper pitch to floor drains. The surface of new concrete must be left at least 1/2" below finished grade to accommodate the thickness of the new flooring.

C. Dislodge dirt, mortar spatter and other dry surface accumulations and contamination by scraping, brushing, sweeping, vacuuming or compressed air blow down.

3.3 INSTALLATION

A. General: Comply with manufacturers written installation instructions.

B. Apply bond coat over prepared substrate at manufacturer's recommended spread rate.

C. Install Body Coat over primer, trowel apply epoxy mortar mix at nominal ¼- inch thickness: hand or power trowel. When cured, sand or grind if necessary to remove trowel marks and roughness.

D. After body coat has cured sufficiently, apply grout and finish coats of type recommended by flooring manufacturer to produce finish matching approve sample and in number of coats and spreading rates recommended by manufacturer.
   1. Final finish coat shall be in color and skid retardant profile in conformance with the Contract documents. Color designated as noted in Finish Schedule.
   2. Finish Floor shall be ¼" thick, uniform in color and free of trowel marks.

E. Apply integral cove base mix to wall surfaces at locations shown to form covebase height of 4 inches unless otherwise indicated. Follow manufacturer's printed instructions and details including taping, mixing, priming, troweling, sanding and top-coating of cove base.

3.4 CLEANING AND PROTECTING

A. Remove any material spatters and other material that is not where it should be. Remove masking and covers taking care not to contaminate surrounding area and abuse the newly installed floor covering.

C. Repair any damage that should arise from either the application effort or from the clean up effort.

END OF SECTION 09 670

SECTION 09 680 - CARPET

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Carpet

B. Related Sections include the following:
   1. Division 9 Section "Resilient Floor Tile" for resilient wall base and accessories installed with carpet.

1.3 SUBMITTALS

A. Product Data: For the following, including installation recommendations for each type of substrate:

   1. Carpet: For each type indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance.

B. Shop Drawings: Show the following:

   1. Carpet type, color, and dye lot.
   2. Seam locations, types, and methods.
   3. Type, color, and location of edge, transition, and other accessory strips.
   4. Transition details to other flooring materials.

C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

   1. Carpet: 12-inch- (300-mm-) square Sample.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency.

F. Maintenance Data: For carpet to include in maintenance manuals. Include the following:

   1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.

2. Precautions for cleaning materials and methods that could be detrimental to carpet.

G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with CRI 104, Section 5, "Storage and Handling."

1.6 PROJECT CONDITIONS

A. Comply with CRI 104, Section 7.2, "Site Conditions; Temperature and Humidity" and Section 7.12, "Ventilation."

B. Environmental Limitations: Do not install carpet until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.

D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before installing these items.

1.7 WARRANTY

A. Special Warranty for Carpet: Manufacturer's standard form in which manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.

1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, excess static discharge, and delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

1.8 EXTRA MATERIALS

A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd. (8.3 sq. m).

PART 2 - PRODUCTS

2.1 CARPET

A. Products: As listed on the drawings.

1. CP-1: Chicago; CH701-06 Randolph; Enhanced Loop Graphics; Ultron Color Nylon 6.6; Gauge 1/10th; Stitches per inch 14; Pile Height .156; Tufted Yard Weight 28 oz. Per sq. yd. Yarn Const.: 2 ply heat set; Dyeing Process: Piece Dyed; Primary Backing: Composite; Secondary Backing: Action Back; Total Weight: Approx. 67oz. Per sq. yd; Pattern Repeat: 1.6"wx1.5"L; Static Control: Permanent, Built-in Anti-Control, Soil Retardant: Royalguard Soil Resist Treatment; Density Factor (D): 6,462 Wight Density (WD): 180,936 Flammability Test: Passes CRI Indoor Air Quality: #13600678; Warranty: 10 Year Fiber Wear & Life-of-the-Carpet Anti-Static

2. CP-2: St. Louis; SL703-06 Randolph; Enhanced Loop Graphics; Ultron Color Nylon 6.6; Gauge 1/10th; Stitches per inch 14; Pile Height .156; Tufted Yard Weight 28 oz. Per sq. yd. Yarn Const.: 2 ply heat set; Dyeing Process: Piece Dyed; Primary Backing: Composite; Secondary Backing: Action Back; Total Weight: Approx. 67oz. Per sq. yd; Pattern Repeat: 1.6"wx1.5"L; Static Control: Permanent, Built-in Anti-Control, Soil Retardant: Royalguard Soil Resist Treatment; Density Factor (D): 6,462 Wight Density (WD): 180,936 Flammability Test: Passes CRI Indoor Air Quality: #13600678; Warranty: 10 Year Fiber Wear & Life-of-the-Carpet Anti-Static

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet manufacturer.

B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet manufacturer.

C. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other

conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.

B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:

1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet manufacturer.
2. Subfloor finishes comply with requirements specified in Division 3 Section "Cast-in-Place Concrete" for slabs receiving carpet.
3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with CRI 104, Section 7.3, "Site Conditions; Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrates.

B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch (3 mm) wide or wider, and protrusions more than 1/32 inch (0.8 mm), unless more stringent requirements are required by manufacturer's written instructions.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet manufacturer.

D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 INSTALLATION

A. Comply with CRI 104 and carpet manufacturer's written installation instructions for the following:

1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation."

B. Comply with carpet manufacturer's written recommendations and Shop Drawings for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

C. Do not bridge building expansion joints with carpet.

D. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

E. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.

3.4 CLEANING AND PROTECTING

A. Perform the following operations immediately after installing carpet:

1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
2. Remove yarns that protrude from carpet surface.
3. Vacuum carpet using commercial machine with face-beater element.

B. Protect installed carpet to comply with CRI 104, Section 16, "Protection of Indoor Installations."

C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer and carpet adhesive manufacturer.

END OF SECTION 09 680

SECTION 09 770 - FIBERGLASS REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: fiberglass reinforced plastic panels.

B. Related Sections: Section(s) related to this section include:

1. Section 09260 Gypsum Board Assemblies.

1.02 REFERENCES

A. ASTM International:

1. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
2. ASTM D5420 Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).
3. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide fiberglass reinforced plastic (FRP) panels which have been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data: Submit product data, including manufacturer's SPEC-DATA™ product sheet, for specified products.

C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures. Indicate location and dimension of joints and fastener attachment.

D. Samples: Submit selection and verification samples for finishes, colors and textures. Submit 2 samples of each type of panel, trim and fastener.

E. Quality Assurance Submittals: Submit the following:

1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.
3. Manufacturer's Instructions: Manufacturer's installation instructions. Submit manufacturer's *Installation Guide #6211*.

F. Closeout Submittals: Submit the following:

1. Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.
2. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.

2. Manufacturer Qualifications: Manufacturer should be capable of providing field service representation during construction and should be capable of approving application method.

1.06 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirements Sections.

B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Package sheets on skids or pallets for shipment to project site.

D. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Store panels indoors in a dry place at the project site.

E. Handling: Remove foreign matter from face of panel by using a soft bristle brush, avoiding abrasive action.

1.07 PROJECT CONDITIONS

A. Environmental Requirements:

1. Installation shall not begin until building is enclosed, permanent heating and cooling equipment is in operation, and residual moisture from plaster, concrete or terrazzo work has dissipated.

2. During installation, and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.

3. Provide ventilation to disperse fumes during application of adhesive as recommended by adhesive manufacturer.

B. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.08 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1.09 MAINTENANCE

A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals (Maintenance Materials) Section.

1. Quantity: Furnish quantity of 2 %. of amount installed.

2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra materials.

PART 2 PRODUCTS

2.01 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

A. Manufacturer: Kemlite Company, Inc. “Glasbord-P Surfaseal Class C” used as standard of quality

1. Contact: Joliet Sales Office, PO Box 2429, Joilet, IL 60434; Telephone: (800) 435-0080, (815) 467-8600; Fax: (815) 467-8666; E-mail: kemlitesales@kemlite.com; Web site: www.glasbord.com.

B. Proprietary Product(s)/System(s): Kemlite Fiberglass Reinforced Plastic (FRP) Panels.

a. Size: as indicated on drawings.

b. Moldings: Provide harmonizing PVC (polyvinyl chloride) moldings. 84 ivory.

c. Rivets: Per manufacturer’s recommendations to match color of panels. Refer to *Installation Guide #6211* for rivet pattern and installation instructions.].

2. Division Bars, Corner Trim: Panel manufacturer’s standard length extruded vinyl pieces; longest length possible to eliminate end joints.

3. Fasteners: Noncorrosive drive rivets.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: Manufacturers whose products meet and or exceed the following performance requirements may submit their products for review and approval.

2.03 MANUFACTURED UNITS

A. Kemlite Glasbord-P Fiberglass Panels with *Surfaseal* Surface Protection:

1. Rating: Class III (C) Interior Finish.

2. Wall Panels: Finish, thickness and color shall be(indicated as Surf-#):

a. Embossed 0.09 inch (2.3 mm) Glasbord-P with *Surfaseal* Color: 84 ivory.

3. Performance Properties: Provide products with the following properties:

a. Class C flamespread of 200 or less, smoke developed of 450 or lower per ASTM E84 latest version.

b. Barcol Hardness (scratch resistance) per ASTM D2583 of:

1) 35 for embossed 0.09 inch (2.3 mm) Glasbord-P.

c. Panels shall exhibit no more than a 0.038% weight loss after a 25 cycle Taber Abrasion Test using CS-17 abrasive wheels with 1000 g weight.

d. Meets USDA/FSIS requirements.

e. Complies with ICBO Report Number 4583.

f. A means of frontside identification and confirmation of meeting Class III (C) the interior finish requirement after installation and while in service (without labels) embossed panels only.

g. Class C Skin: 0.09 inch (2.3 mm) embossed.

2.04 ACCESSORIES

A. Adhesive: Provide panel adhesive as recommended by panel manufacturer.

2.05 RELATED MATERIALS

A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for

related materials.

2.06 SOURCE QUALITY

A. Source Quality: Obtain fiberglass reinforced plastic (FRP) panels from a single manufacturer. Provide panels and molding only from manufacturer specified to ensure warranty and color harmonization of accessories.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

A. Site Verification of Conditions: Verify that substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

1. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails are countersunk and joints and cracks are filled flush and smooth with the adjoining surface.
2. Do not begin installation until backup surfaces are in satisfactory condition.

3.03 PREPARATION

A. Surface Preparation: [Specify applicable product preparation requirements.].

3.04 INSTALLATION

A. Fiberglass Reinforced Panel (FRP) Installation:

1. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.
2. Install panels with manufacturer's recommended gap for panel field and corner joints.
3. Predrill fastener holes in panels with 1/8 inch (3.2 mm) oversize.
4. For trowel type and application of adhesive, follow adhesive manufacturer's recommendations.
5. Use products acceptable to panel manufacturer and install FRP system in accordance with panel manufacturer's printed instructions. Comply with panel manufacturer's *Installation Guide #6211*.

3.05 CLEANING

A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace products that have been installed and are damaged. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

1. Remove any adhesive or excessive sealant from panel face using solvent or cleaner recommended by panel manufacturer.

3.06 PROTECTION

A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION 09 770

SECTION 09 910 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
1. Painting or otherwise finishing all exposed interior surfaces not already coated with decorative finish or scheduled to receive other finishes specified in Division 09; primed finish surfaces do not constitute decorative finish. Items indicated below and in Specification Sections do not require painting.
2. Touching up shop applied prime coats.
3. Surface preparation and verification required to receive finishes.
4. Priming and back priming interior finish carpentry.
5. Finishing millwork.
6. Touching up damaged, prefinished items.

B. Related sections:
1. Section 07920: Joint Sealants.

1.2 REFERENCES

A. Standards of the following as referenced:
1. Association of Wall and Ceiling Industries International (AWCI).
2. Ceiling and Interior Systems Construction Association (CISCA).
3. Gypsum Association (GA).
4. Occupational Safety and Health Administration (OSHA).
5. Painting and Decorating Trade Contractors of America (PDCA).
6. Steel Structures Painting Council (SSPC).

B. Industry standards:
1. AWCI, CISCA, GA, and PDCA developed: *Recommended Specifications on Gypsum Board Finish*, undated.
2. OSHA: *Occupational Safety and Health Standards, 29 CFR 1910.1025*, 1988 edition.
3. PDCA: *Design Builderural Specifications Manual*.
4. SSPC: *Systems and Specifications*, September 1989 edition.

1.3 DEFINITIONS

A. Terms:
1. Coating:
a. Mixture of pigment in liquid vehicle and binder as one part or multiple part components applied on surface using roller, brush, or spray application drying or chemically curing to form film, decorative or clear, having superior characteristics for corrosion, abrasion, immersion, severe ambient conditions, or chemical resistance or combination of those characteristics.
b. Generally meet Environmental Classifications defined as Type A, Aggressively Corrosive; Type C, Corrosive; Type M, Moderate; or Type P, Protected Design Builderural.

B. DFT: Dry film thickness, minimum application.

C. Paint:
   1. Mixture of pigment in liquid vehicle and binder, generally single component packaged, applied thinly on a surface using roller, brush, or spray forming opaque decorative film not intended for use corrosive.
   2. Coating not meeting any Environmental Classifications for use indicated above.

D. VOC: Volatile organic compounds.

E. WFT: Wet film thickness.

1.4 SUBMITTALS

A. Product data:

B. Complete list of products for use; indicate compliance with:
   1. mercury-free composition requirements.
   2. VOC limits, when mixed and thinned.
   3. Indicate lead content.

C. Indicate manufacturer, brand name, quality, and type paint for each surface to be finished.

D. Additional requirements:
   1. Article 2.01, Paragraph A, Subparagraph 1 indicated manufacturer's prepared product comparison guide indicating all specified paints.
   2. Correlate to specified item if from other manufacturer than standard of quality specified item; use standard of quality manufacturer's product comparison guide.
   3. Specified manufacturer's data sheets for specified products.
   4. Submit proposed and submitted manufacturer's data sheets as, and if, allowed in PART 2; include product cross-referencing.

E. *Manufacturer's Safety Data Sheets*, (M.S.D.S.), for materials.

F. Samples:
G. Colors: Color sample sets for color verification of indicated colors.
H. Brush-outs:
   1. Prepare actual brush-out samples for each color paint or finish specified and indicated.
   2. Submit in duplicate; minimum size, 120 SI.
   3. Apply products in number of coats specified for actual work.
   4. Use following substrates for brush-outs: Actual substrates for paint finish.

I. Quality control submittals:

J. Certificates:
   1. Indicate interior paints are mercury-free.

2. Indicate lead content. Lead content in excess of 0.06% by weight of nonvolatile content calculated as lead metal is prohibited.
3. Indicate compliance with applicable VOC limits when mixed and thinned.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Storage and protection:

B. Store materials in location or locations acceptable to concerned entities; follow published local code requirements.

C. Protection:
1. Maintain neat, clean conditions in storage area; remove used rags from work areas at end of each day's work; store rags in closed containers.
2. Close containers at end of each day's work; leaving full or partially expended material containers open is prohibited.

D. Safety precautions:
1. Furnish and maintain temporary fire protection equipment in, or directly adjacent to, materials storage area. Mark fire protection equipment location for quick access.
2. Prohibit smoking in storage area; post signs in visible location adjacent to and within storage area.

1.6 PROJECT CONDITIONS

A. Environmental requirements: Comply with manufacturer's recommendations regarding environmental conditions for materials application.

1.7 SEQUENCING AND SCHEDULING

A. Schedule and coordinate construction activities in this section with other sections; proceeding until conditions are correct to achieve satisfactory results is prohibited.

B. Examine specification sections; be thoroughly familiar with construction activities in other sections regarding painting.

C. Field applied primer on steel frames: Coordinate with Steel Doors and Frames Section 08110 and Security Hollow Metal Doors and Frames Section 08110 for application of specified field primer within seven days after installation of steel frames specified in respective Sections.

1.8 MAINTENANCE

A. Extra materials:
1. Furnish one unopened one gallon container for each color and type paint used as additional materials.
2. Store on Project site where directed by Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acceptable manufacturers:
   1. Products specified as standard of quality are manufactured by ICI - The Glidden Company, except as otherwise noted.
      a. Using manufacturer listed below requires additional submittal requirements listed in SUBMITTAL Article, "Product data" Paragraph.
      b. Use product comparison chart next higher listed quality paint and stain in cases where below listed and submitted manufacturer does not have a straight line cross-referenced product to specified product.
   2. Products of manufacturers listed below meeting or exceeding indicated standards, specified manufacturer's product data characteristics, color selection, and solids, except as modified below, are acceptable for use, subject to approval of product list, colors, and samples.
      a. Paints:
      b. Benjamin Moore Company.
      c. Devoe and Raynolds Company, Inc.
         d. Duron, Inc.
         e. Porter International.
         f. PPG Industries Inc.
         g. Sherwin-Williams Company.
   3. Coatings:
      1. Ameron Protective Coatings Division.
      2. Porter International.
      3. PPG Industries Inc.
      4. Sherwin-Williams Company.
      5. Tnemec Company, Inc.

B. Paint systems indicated in SCHEDULES Article.

C. Furnish products for specified paints from single manufacturer; except items indicated in MATERIALS Article, Paragraph C.

D. Miscellaneous materials:
   1. Paint thinners and tints: Products of same manufacturer as paints or approved by paint manufacturer for use with his products.
   2. Shellac, turpentine, patching compounds, and similar materials: Pure, best quality products.
   3. Mildewcide paint additive for paints not already containing mildewcide:
      a. Acceptable product: Enviro-Chem, Inc.; Stay-Clean I/E*.
      b. Characteristics: 50.0% 2-(4-thiazolyl) Benzinidazole; EPA Registration #10445-76-47332.

E. Paint colors: Indicated in Finish Schedule as PT-# .

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of conditions: Verify gypsum board surfaces have been finished in accord with "Level #" requirements specified in Gypsum Board Assemblies Section for finish level indicated.

3.2 PREPARATION

A. Protection:
   1. Cover finished work specified in other sections, surfaces not being painted concurrently, and prefinished items.
   2. Applying materials in spaces where dust is being generated is prohibited.
   3. Verify surfaces to receive finishes are dry, free of debris, dust, or other deleterious materials.
   4. Concrete Floors: Remove contaminants which could impair coating performance or appearance, acid-etch, flush with clean water; verify alkaline-acid balance recommended by coating manufacturer; mechanically abrade surface, if required, to achieve medium-sandpaper texture.

3.3 APPLICATION

A. Substrate preparation:
   1. Lumber, plywood, and veneered surfaces:
      a. Apply shellac, maximum four lb. cut, to knots, pitch, and resinous sapwood prior to application of first paint coat.
      b. Painted surfaces: Fill nail holes, cracks, joints, and defects with spackling compound. Apply after first paint coat.
      c. Sand surfaces smooth, except where rough-sawn surfaces are indicated. Dust to remove debris.
      d. Treat mildewed surfaces with solution of one quart hypochlorite bleach, one tablespoon laundry detergent, and three quarts water. Rinse and allow to dry prior to painting.
      e. Previously painted surfaces:
      f. Remove dirt, debris, and chalking by washing with detergent and water or low pressure cold water spray.
      g. Dull glossy surfaces by light sanding.
      h. Remove loose paint and blisters by scraping and sanding.
      i. Fill holes and defects.
   2. Gypsum board: Fill narrow, shallow cracks and small holes with patching plaster or non-shrinking spackling compound. Allow to dry; sand smooth without raising gypsum board paper nap.
   3. Concrete unit masonry: Rub to remove loose mortar and debris. Fill irregularities with cement grout.
   4. Previously painted masonry:
      a. Remove existing loose or blistered paint by scraping or brushing.
      b. Remove debris and chalking from surfaces after scraping and washing with detergent and water; flush with clean water. Touch up with material specified for finish.
   5. Galvanized metal: Wash with xylol to remove grease, oil, and contaminants;

wipe dry with dry cloth.

6. Ferrous metals, not primed: Solvent clean in accord with SSPC-SP-1, Solvent Cleaning, to remove grease, oil, and contaminants; power tool clean surfaces in accord with SSPC-SP-3, Power Tool Clean, minimum. Wipe dry with dry cloth. Apply primer specified in SCHEDULES Article below to pin hole free.
7. Shop primed metals, ferrous, galvanized, and non-ferrous:
   a. Touch-up shop primer with same or compatible primer to pin hole free surface.
   b. Using specified primer below may not be required if pin hole free shop primer is intact; verify with paint manufacturer prior to submittal time.
   c. Severely abraded or pin holed shop primer requires preparation indicated above in "Not primed" subparagraph over entire surfaces; include surfaces concealed from view in built-in equipment where moisture is present during concrete or masonry grout cure.
   d. Indicate specified primer requirement or non-requirement on submittal.

B. Coating application:
   1. Apply materials
      a. in accord with manufacturer's approved product data to achieve specified DFT.
      b. only when moisture content of surfaces is within manufacturer's recommended range.
      c. using clean brushes, rollers, or spray equipment. Limit paint spraying only to those materials recommended by manufacturer to be sprayed with no loss of performance, durability, or color.
      d. at rate not exceeding manufacturer's recommendations for surface being coated, less normal percentage loss for each specified material.
   2. Comply with manufacturer's product data for drying time between coats.
   3. Sand and dust between coats to remove defects visible from 5'-0" distance.
   4. Finish coats: Smooth, free of brush marks, streaks, laps or pile-up of paint, skips, or missed areas.
   5. Make coating edges adjoining other materials or colors sharp and clean without overlapping.
   6. Primer coats may be omitted for surfaces specified to receive factory applied primer if finish coats are compatible with primer. Substitute bond coat recommended by paint manufacturer for specified primer coat if finish coats are not compatible.
   7. Refinish entire partition surface where portion of finish on gypsum board partition is damaged or unacceptable.
   8. Back prime exterior finish carpentry and millwork with material specified for prime coat without runs on face; finish cut edges just prior to installation.
   9. Paint inside of ductwork flat black for entire area visible through ceiling openings. Paint underside of ductwork and other above ceiling items flat black for entire area visible through ceiling openings.
   10. Seal interior doors' tops and bottoms with prime coat only; side edges same as faces. Where different colors are indicated for each face, paint edges same color as face exposed when door is in open position.
   11. Finish exterior door edges with same finish as exterior face.
   12. Paint exposed pipes and ductwork in occupied areas same color as adjacent wall surfaces using appropriate paint system. Paint ungalvanized pipe, pipe hangers,

and ferrous metal items in areas indicated below indicated as not requiring paint.

13. Mask to prevent paint covering following items; remove masking at completion:
    1. UL or WH labels on doors and frames.
    2. Mechanical and electrical items or devices:
        a. Information plates.
        b. Plates indicating lubrication instructions.
        c. Moving parts specified by equipment manufacturer to be maintained in lubricated condition during operation.
    3. Valve stems.
    4. Lubricated or wearing surfaces.
    . Bright plated metal or polished stainless steel.
    5. Sprinkler heads, sensors, and smoke detectors.
    6. HVAC control devices.
14. Surfaces not requiring painting:
    1. Prefinished surfaces and items.
    2. Concealed ductwork, conduit, and piping.
    3. Factory painted devices or equipment not otherwise indicated to receive paint.
    4. Surfaces within pipe chases, furred areas, and elevator shafts.

C. Quantities of coats specified below are minimums. Trade Contractor is responsible for application of additional coats necessary to achieve required coverage and color uniformity.

3.4 CLEANING AND PROTECTION

A. Upon completion of painting work, remove rubbish, debris, empty containers, rags and other discarded paint materials from site.

B. Remove protective coverings and maskings. Re-install hardware, accessories, device plates, lighting fixtures and similar items removed to original location, undamaged.

C. Clean spattered paint from surfaces including glass. Do not scratch or damage adjacent finished surfaces when cleaning.

D. Protect finished surfaces from damage throughout remainder of construction. Post warning signs to protect fresh painted surfaces.

E. Not more than 48 hours prior to Date of Substantial Completion, touch-up and restore damaged, scratched or marred painted surfaces.

3.5 SCHEDULE; EXTERIOR

A. Metals; ferrous and non-ferrous:
    1. Primer:
    2 On ferrous metals: No. 4160XXXX DEVGUARD Multipurpose Metal Primer pin hole free; 2.0 mils DFT.
        a. On galvanized metals, stainless steel, and aluminum to pin hole free: No. 4120XXXX DEVGUARD All-Purpose Metal & Galvanized Primer 2.0 mils DFT.
    3. Acrylic, gloss:

a. Primer: Specified above.
b. Gloss; two finish coats, each coat: 4208XXXX DEVFLEX Waterborne Acrylic Gloss Enamel Interior/Exterior 1.5 mils DFT.

3.6 SCHEDULE; INTERIOR

A. Wood:
1. Latex:
a. Primer: No. 1120XXXX ULTRA-HIDE Oil/Alkyd Primer Interior Wood Undercoater 1.6 mils DFT.
b. Semi-gloss; two finish coats, each coat: No. 1416XXXX ULTRA-HIDE Latex Semi-Gloss Interior Wall & Trim Enamel; 1.5 mils DFT.

B. Concrete unit masonry, CMU:
1. Filler: ULTRA-HIDE No. 3010XXXX Acrylic Block Filler Interior/ Exterior pin hole free.
2. Latex:
a. Eggshell; two Finish coats, each coat: No. 1412XXX Ultra-Hide Latex Eggshell Interior Wall and Trim Enamel 1.4 mils DFT.
b. Semi-gloss; two finish coats, each coat: No. 1416XXXX ULTRA-HIDE~ Latex Semi-Gloss Interior Wall & Trim Enamel; 1.4 mils DFT.

C. Gypsum board:
1. Latex:
a. Flat; two finish coats, each coat: No.1210XXXX ULTRA-HIDE Latex Flat Wall Paint 1.4 mils DFT.
b. Eggshell; two finish coats, each coat: No. 1412XXXX ULTRA-HIDE Eggshell Interior Wall & Trim Enamel; 1.4 mils DFT.
c. Semi-gloss; two finish coats, each coat: No. 1416XXXX ULTRA-HIDE Latex Semi-Gloss Interior Wall & Trim Enamel; 1.5 mils DFT.

D. Metals; ferrous and non-ferrous:
1. Primer:
a. On ferrous metals: No. 4160XXXX DEVGUARD Multi-Purpose T&S Primer to pin hole free; 2.2 mils DFT.
b. On galvanized metal and aluminum: No.4120XXXX DEVGUARD All-Purpose Metal & Galvanized Primer to pin hole free; 2.0 mils DFT.
2. Latex:
a. Primer: Specified above.
b. Semi-gloss; two finish coats, each coat: No. 1416XXXX ULTRA-HIDE Latex Semi-Gloss Interior Wall & Trim Enamel; 1.5 mils DFT.

E. Concrete Floors Not Subject to Vehicular Traffic:
1. Low Gloss, Pigmented: Two coats Duron Interior/Exterior Porch & Floor Low Gloss Alkyd Enamel, 18-0x-Series.
2. Gloss, Clear, Water-Borne: One coat Tuf-Top PSC (primer, sealer, chalk binder) manufactured by Marine Industrial Paint Co., Inc., Duron Item Number 98-23376 (1 gallon), 98-90012 (5 gallon).
3. Gloss, Clear, Solvent-Based: One coat Duron Dura Clad Polyamide Epoxy Primer/Finish, 33-04132.

4. Gloss, Pigmented: Two coats Duron Dura Clad Alkyd Gloss Enamel, Urethane Modified, 12-Series.

END OF SECTION 09 910